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DISTRIBUTION OF FISH EGGS AND LARVAE, TEMPERATURE, AND SALINITY IN THE GEORGES BANK-GULF OF MAINE AREA, 1953

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UNITED STATES DEPARTMENT OF THE INTERIOR
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Fish and Wildlife Service, Clarence F. Pautzke, Commissioner
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DISTRIBUTION OF FISH EGGS AND LARVAE, TEMPERATURE, AND SALINITY IN THE GEORGES BANK-GULF OF MAINE AREA, 1953

by

Robert R. Marak and John B. Colton, Jr.

United States Fish and Wildlife Service
Special Scientific Report--Fisheries No. 398

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DISTRIBUTION OF FISH EGGS AND LARVAE, TEMPERATURE, AND SALINITY IN THE GEORGES BANK-GULF OF MAINE AREA, 1953

by

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ABSTRACT

Basic data on the distribution of fish eggs and larvae in the Georges Bank-Gulf of Maine area were collected on surveys made by the Bureau of Commercial Fisheries research vessel *Albatross III* during the spring of 1953. The data are presented in tabular and graphic form. The methods and operational procedures pertinent to these surveys are given. Plots and tables of surface temperature and salinity are also included.

INTRODUCTION

A program to study the early life history of haddock on Georges Bank, Browns Bank, and in the Gulf of Maine was started at the Bureau of Commercial Fisheries Biological Laboratory, Woods Hole, Massachusetts, in the spring of 1953. It was the purpose of this program to attempt to relate the pattern of drift of eggs and larvae to the success of the year class. Fish egg and larvae surveys were undertaken to locate centers of abundance of haddock eggs and larvae and to trace their movements during the early, and presumably critical, months of their existence in relation to time, space, and ecological conditions. The purposes of this report are to describe the methods used and to present basic data on the distribution of fish eggs and larvae, temperature, and salinity during the spring of 1953. To avoid confusion all young fish (prolarvae, postlarvae, juveniles) are referred to as larvae. A list of species of fish eggs and larvae (with species code letters used in the tables) collected during the surveys of 1953 is given in table 1.

Data for temperature and salinity observations in relation to 1-meter tows and Hardy Plankton Recorder gauze sections are given in tables 2, 3, and 4.

[1] Temporarily detailed to Bureau of Commercial Fisheries Biological Laboratory, Auke Bay, Alaska.

COLLECTION OF DATA

Three cruises were made during the spring of 1953 by the *Albatross III:* cruise no. 46, March 19 to April 2; cruise no. 48, April 24 to May 8; and cruise no. 50, May 25 to June 3. The cruises were planned so the area of investigation would be covered twice in approximately 14 days to make possible the observation of any rapid changes that might affect the eggs and larvae.

The procedure involved continuous towing of Hardy Plankton Recorders (Hardy, 1936 and 1939), bathythermograph lowerings, surface temperature and salinity observations, drift-bottle releases, and surface tows with a 1-meter net.

Cruise Plan

With the ship stopped, the number of the gauze division at the bottom of the tunnel was noted and the recorders lowered to the proper marks on the towing cables. A Loran fix was taken, and the ship was brought promptly to 10 knots (normal towing speed). Every hour a bathythermograph lowering was made and a surface temperature was taken by bucket thermometer. When time permitted, a water sample was taken for a salinity determination, concurrent with the surface-temperature observation. Drift bottles were released every 3 hours or approximately 30 miles apart. Twelve bottles were released at each station; 6 were ballasted with sand to float vertically with the necks just breaking the surface, thus minimizing the wind effect,

and the remainder unballasted. Positions of bottle releases and recoveries have been published by Bumpus and Day (1957). Every 12 hours, the ship was stopped, a fix taken, and both recorders checked. The highest number appearing on the gauze in the tunnel was noted, and the gauze wound manually to the next division. At this time, a surface tow was taken with a 1-meter net. Every 48 hours, the gauze roll was removed, a new one loaded, and the paired towing straps replaced. Torsional fatigue rapidly reduced the breaking stress of the towing wire and paired straps and necessitated the precautions outlined. Details and specifications of the silk, wire rope, and so on, and methods of loading and handling the recorders can be obtained from the Oceanographic Laboratory, Scottish Marine Biological Association, Edinburgh, Scotland. Every 96 hours, 2 fathoms were cut from the outboard end of the towing cable, and the thimble replaced. After 8 days, the towing wires were turned end for end on the winch. At the end of 16 days, the towing wires were replaced.

Operation of the Hardy Plankton Recorder

One recorder was towed at the surface and one at 10 meters. A 1/2-inch square nosepiece was used, and the propeller pitch was set for a gauze rate of roughly 2 inches per 5 miles of tow at an average towing speed of 10 knots. The gauze (60 meshes per inch silk) was made in 100 2-inch sections, allowing continuous towing for 500 miles without reloading. The time necessary to haul the recorders, advance or change the gauzes, take a 1-meter net haul, and reset the recorders seldom exceeded 1/2 hour.

One-Meter Net Tows

Qualitative samples of fish eggs and larvae for hatching and identification purposes were obtained by a 1-meter net (No. 0 silk) towed on the surface (see figs. 1, 2, and 3) for 10-15 minutes at the slowest possible speed. The spawning seasons and size ranges of the eggs of haddock *(Melanogrammus aeglefinus)*, cod *(Gadus morhua)*, and witch flounder *(Glyptocephalus cynoglossus)* overlap. A few days before hatching, however, the pigment pattern characteristic of the larva appears, and the eggs of the three species can then be distinguished. A portion of the fish eggs was immediately separated from the other plankton and transferred to hatching jars placed in a constant-temperature bath maintained at approximately 8° C. The remainder of the eggs, all larval fish, and a representative sample of other plankton were preserved in 5-percent formalin.

The water in the hatching jars was changed once daily. The eggs were stirred and the temperature recorded three times a day. After the majority of the eggs had hatched, or reached a stage of development where they were readily identifiable, they were preserved in separate vials in 5-percent formalin.

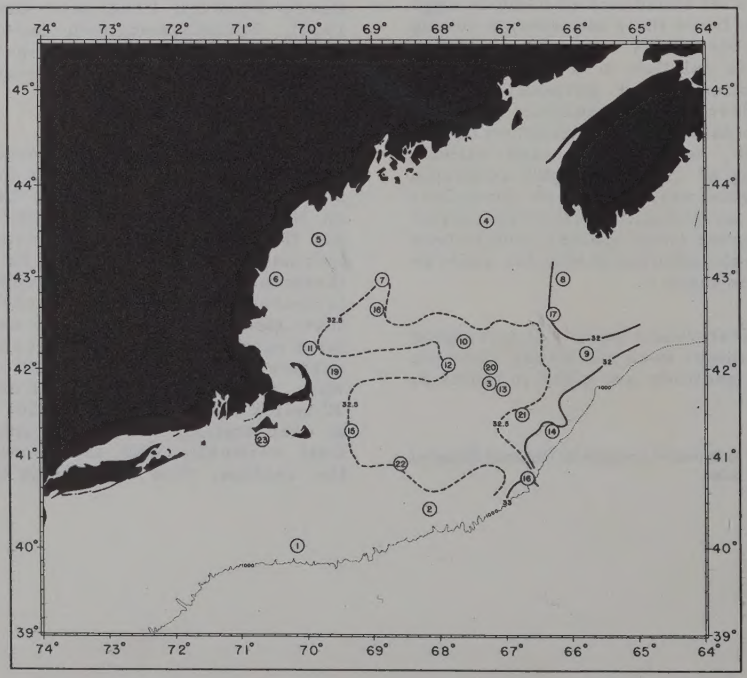

Figure 1.--Distribution of surface salinity and positions of 1-meter net tows, *Albatross III* cruise no. 46, March 19 to April 2, 1953.

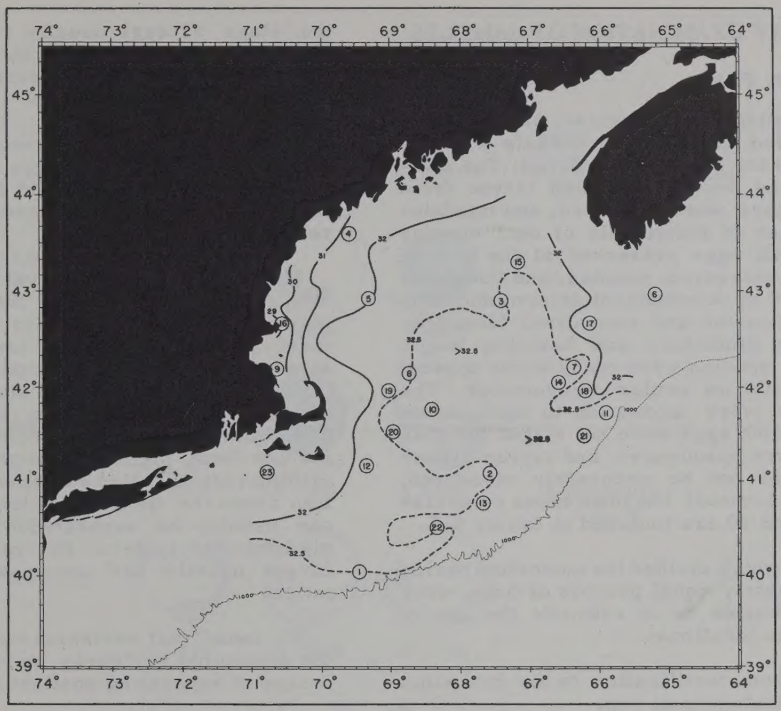

Figure 2.--Distribution of surface salinity and positions of 1-meter net tows, *Albatross III* cruise no. 48, April 24 to May 8, 1953.

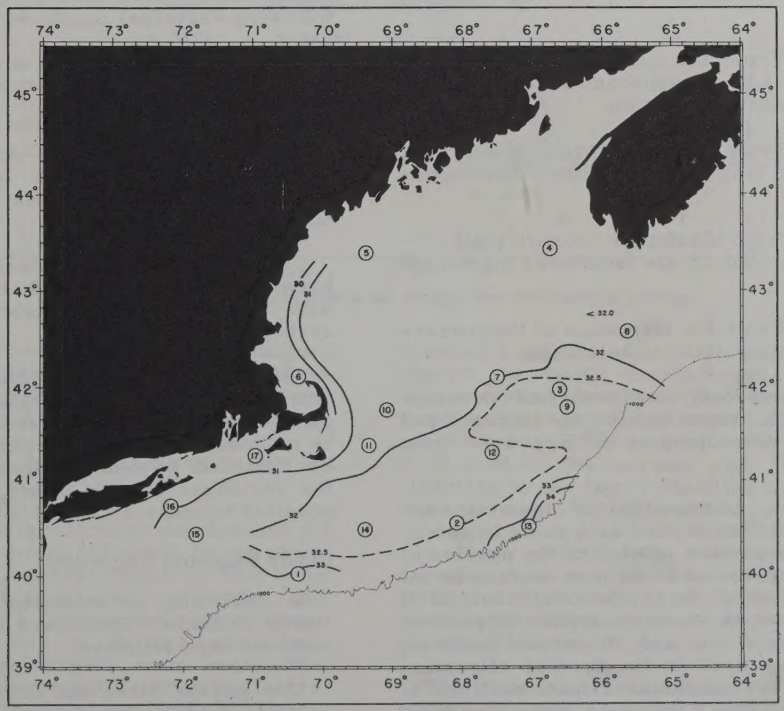

Figure 3.--Distribution of surface salinity and positions of 1-meter net tows, *Albatross III* cruise no. 50, May 25 to June 3, 1953.

LABORATORY EXAMINATION OF SAMPLES

One-Meter Net Tows

At the completion of a cruise, the eggs and larvae collected in the surface hauls with the 1-meter net were examined in detail. The late-stage eggs and recently hatched larvae from the hatching jars were examined, and numbers and proportions of individuals of each species determined. All eggs preserved at the time of capture were measured, counted, and "staged", i.e., the stage of development determined. The larvae were counted and measured. Measurements of egg diameters and hatching length of the various species were made to the nearest 0.01 mm. with an ocular micrometer. The larger larvae were measured to the nearest millimeter. Some eggs were not staged because of their extreme opaqueness, and larvae in poor condition could not be accurately measured. The data for 1-meter net tows taken on cruise nos. 46, 48, and 50 are included in tables 5-7.

Six stages, which divided the incubation period into approximately equal periods of time, were specified to enable us to estimate the age of eggs at various locations:

Stage I.--From fertilization to the formation of the early blastodermal cap.

Stage II.--From the completed blastodermal cap to the development of the segmentation cavity.

Stage III.--From the appearance of the early embryonic axis to the approach of the germinal ring to an equatorial position.

Stage IV.--From the equatorial position of the germinal ring to just before blastopore closure.

Stage V.--From blastopore closure (half circle) to almost full circle (scattered pigmentation).

Stage VI.--From the formation of the characteristic pigment pattern to hatching.

Distinguishing features of embryonic development in the six stages and the age in hours and days for eggs developing at 38° F. are shown in figure 4.

The species composition of eggs at each 1-meter net station served as a guide in determining the proportion of each of the species of eggs picked up by the recorders on runs in the general vicinity of these stations. Thus, if it were found that at a certain station 70 percent of the eggs were cod and 30 percent haddock, this ratio was used in the species allocation of eggs on the individual 2-inch sections of gauze in this area. It was only necessary to do this for stages I-V cod and haddock eggs, as the stage VI eggs usually could be separated by pigmentation. This served as a check on the species composition as determined by the two sampling methods.

Little difficulty was encountered in the identification of other fish eggs. Their characteristic size, taxonomical and distributional (both in time and space) differences made separation relatively simple.

The identification of larval forms of fish often was difficult because of the lack of definite pigment patterns at certain stages of development and because of the crushed condition of some specimens due to impact on the recorder gauzes. In the postlarval stages, especially of haddock, cod, and pollock, where the fish are undergoing a transition from the larval to the mature form, pigmentation patterns tend to fuse making identification extremely difficult. Larval fish from the time of hatching to about 10 mm. can usually be separated by their distinctive pigmentation pattern. Fry of about 30 mm. and larger usually had assumed adult characteristics.

We found that vertebral counts, especially of the abdominal vertebrae, served as an excellent means of separating postlarval gadoids.

After clearing and staining, using the technique described by Hollister (1934) with some modifications described by Clothier (1950), the following vertebral counts were made:

Total vertebrae.--Total number of vertebrae, excluding the urostyle (atlas through penultimate).

Abdominal vertebrae.--Anterior vertebrae (without haemal spines). In gadoids this is synonymous with the number of vertebrae without haemal arches.

Caudal vertebrae.--Posterior vertebrae (with haemal spines). In gadoids this is synonymous with the number of vertebrae having haemal arches.

This method of identification has proved extremely helpful in the classification of samples taken in the plankton recorder where there is a tendency for the specimens to be crushed or flattened beyond recognition. Fortunately, the vertebrae remain intact, and it is usually possible to make a count of abdominal vertebrae.

Hardy Plankton Recorder

In analyzing the material collected by the Hardy Plankton Recorders the following procedures were followed:

The gauzes were cut into divisions of four sections to facilitate handling and examination. The covering gauze was folded back, and both

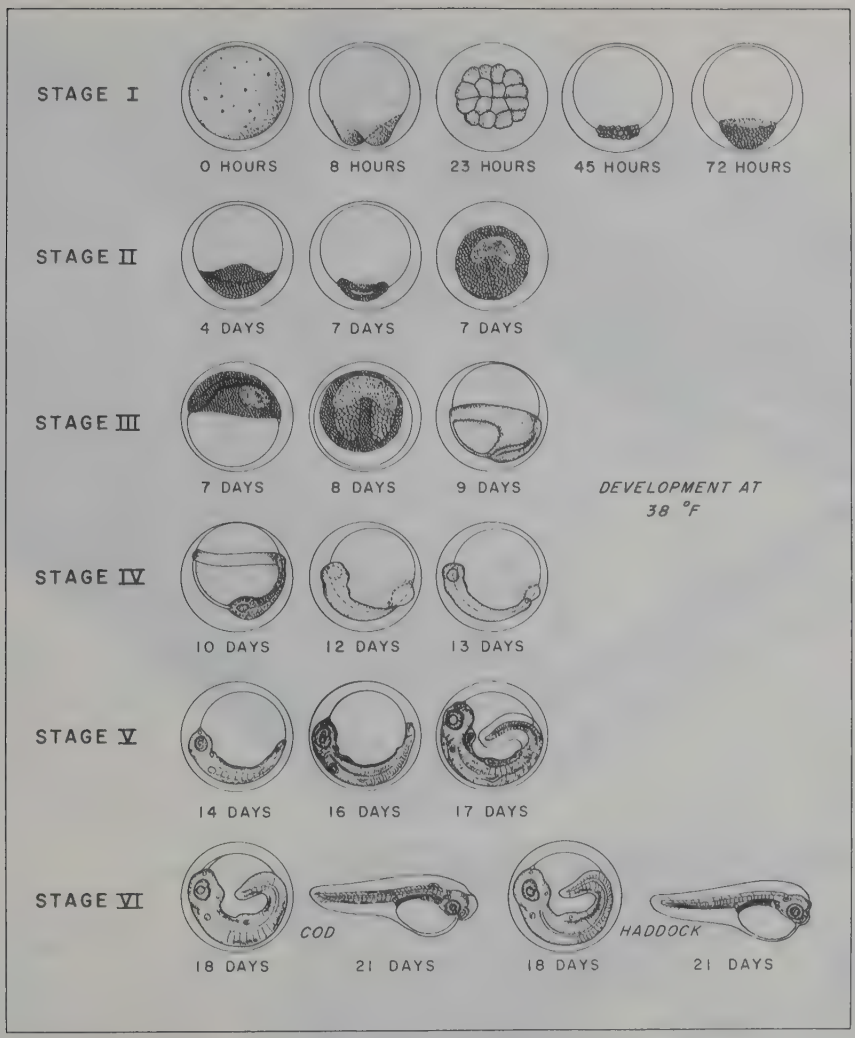

Figure 4.--Stages of development of haddock and cod eggs from fertilization to hatching.

the gauzes were viewed with a specially designed traversing stereomicroscope using 10X magnification (fig. 5). With this magnification it was possible to cover a 2-inch section of the filtering gauze and its corresponding section of covering gauze with two traverses of the microscope.

All fish eggs and larvae were counted and put in vials numbered similarly to the 2-inch gauze section. All eggs, except those in very poor condition, were then staged, measured, and identified using a compound microscope. Because the majority of the eggs were flattened, exact measurements were impossible; therefore, the sizes are not listed in the tables. These measurements were used only for identification purposes. Some eggs in an extremely crushed condition were not staged. All larvae, except the badly crushed specimens, were measured and identified. The very small larvae were measured to the nearest 0.01 mm. and the larger ones to the nearest millimeter. Tables 8-10 contain the surface and 10-meter data collected by the Hardy Plankton Recorders during cruise nos. 46, 48, and 50.

A track chart of the cruise was prepared, showing time and position of each Loran fix, locations of 1-meter net tows, locations of drift-bottle releases, and start and finish of the recorder runs.

The distance traversed for each 2-inch section of exposed gauze was obtained by dividing the total distance run by the number of 2-inch

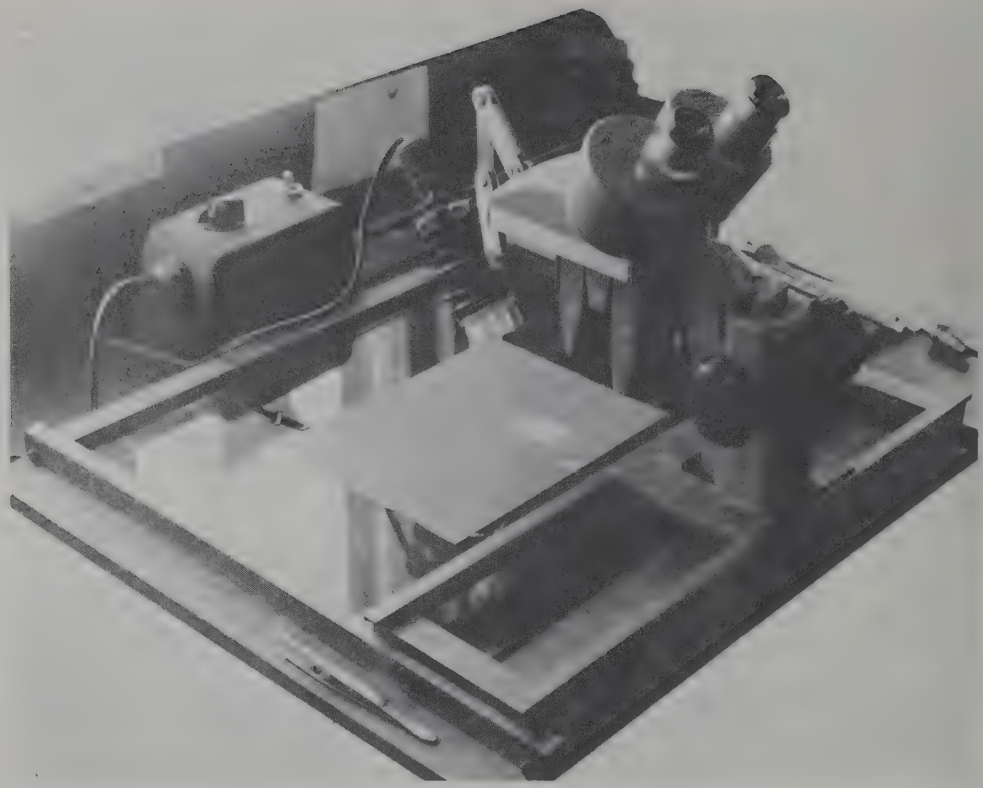

Figure 5.--Traversing microscope used for examining Recorder gauzes.

sections exposed. The track charts were then completed showing locations where individual gauze sections were exposed in recorders both at the surface and at 10 meters (figs. 6-11). Tables 2, 3, and 4 give date, time, and position for reference gauze sections. The section equivalent varied slightly with individual recorders and among distances covered (see tables 11-13). Because the section equivalent varied, the number of eggs and larvae were converted to numbers per 5 miles of tow.

Throughout our work we use numbers per 5 miles of tow as a unit of abundance. In this distance at normal towing speeds, the recorder with a 1/2-inch square opening will theoretically filter 0.30 cubic meters of water per mile. To convert numbers per miles to numbers per cubic meter, it is necessary to multiply by a factor of 0.66.

All numbers listed in tables 8-10 have been converted to numbers per 5 miles of tow and rounded to the nearest whole number.

It will be realized, from the tables 8-10, that the numbers of eggs and larvae in individual samples were very low. Experience has shown, however, that the samples provide excellent material for quantitative studies of distribution and of fluctuations in abundance. This has been demonstrated by Colton, Honey, and Temple (1961), Colton and Marak (in press), Colton and Temple (1961), and Henderson (1954).

Temperature and Salinity

Only surface temperatures were used in the graphic presentation in this report as they were generally found to be indicative of temperatures in the depth of water studied, 10 meters to surface. Observed temperatures were rounded to the nearest whole °F., and salinity values were rounded to nearest 0.5 °/oo (figs. 1, 2, 3, 12, 13, and 14). Actual temperature and salinity figures may be found in tables 2, 3, and 4.

Drift Bottles

A detailed analysis of the data obtained from the drift bottles released on these cruises during the spring of 1953 has been reported by Day (1958).

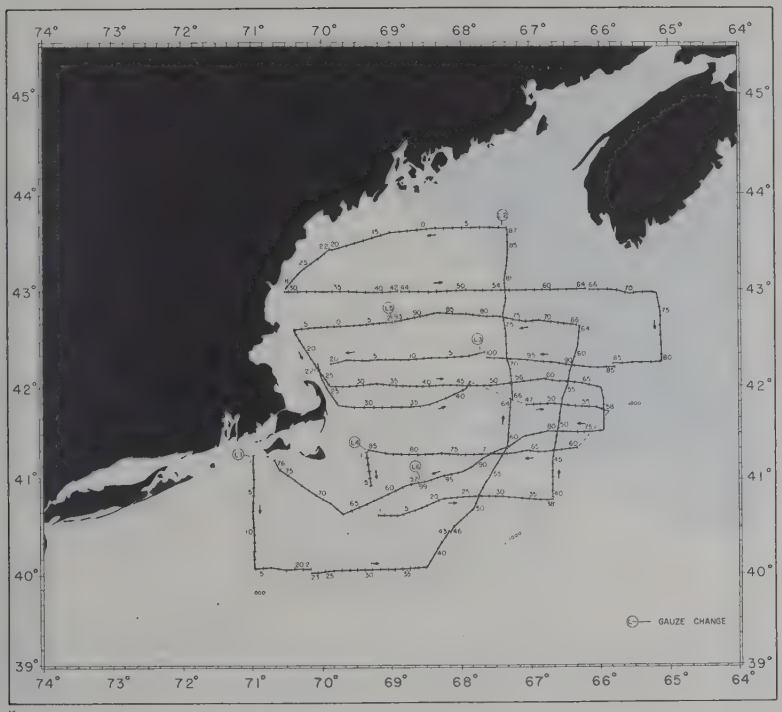

Figure 6.--Track of *Albatross III* cruise no. 46, (March 19 to April 2, 1953) giving positions for each gauze section of the surface Recorder.

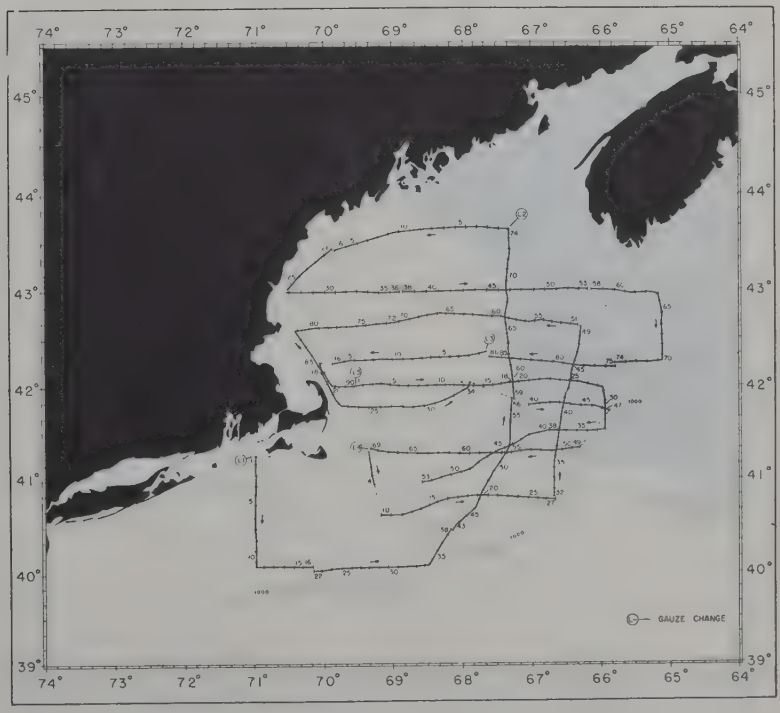

Figure 7.--Track of *Albatross III* cruise no. 46, (March 19 to April 2, 1953) giving positions for each gauze section of the 10-meter Recorder.

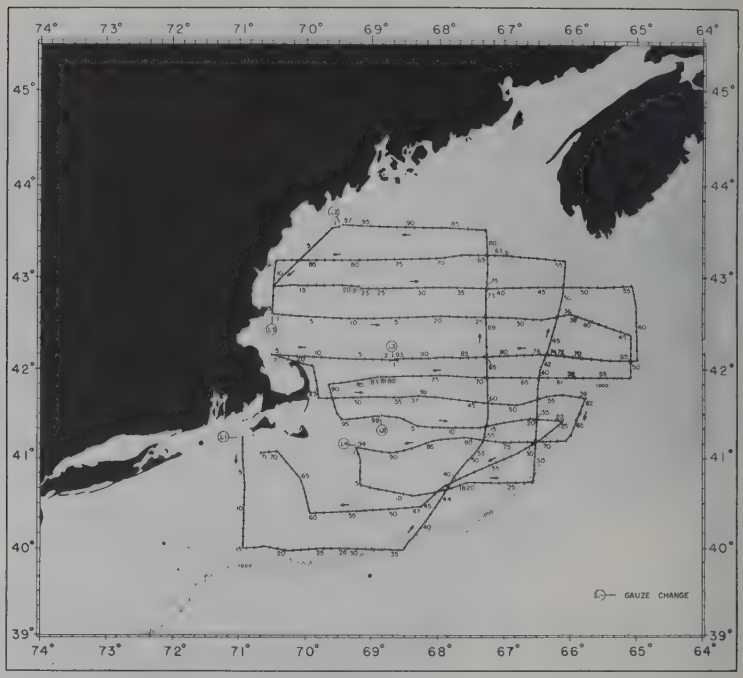

Figure 8.--Track of *Albatross III* cruise no. 48, (April 24 to May 8, 1953) giving positions for each gauze section of the surface Recorder.

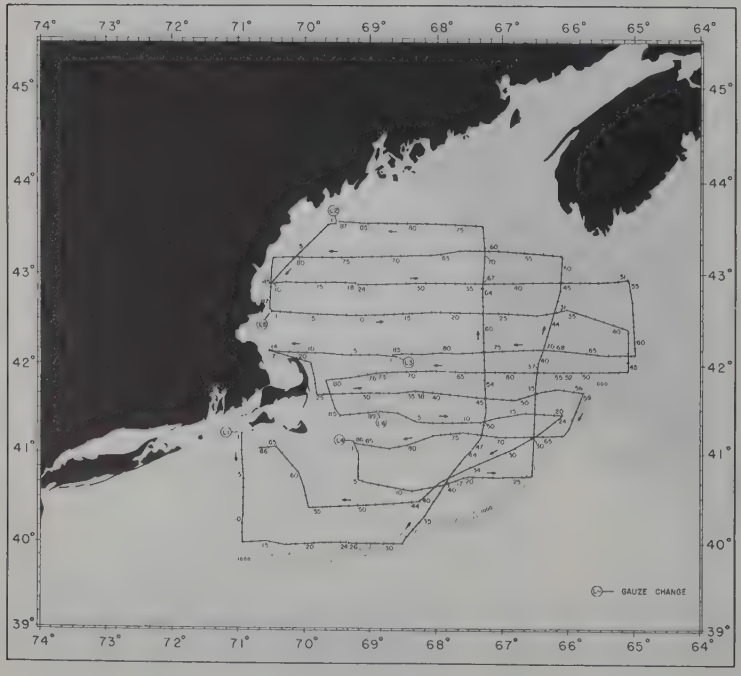

Figure 9.--Track of *Albatross III* cruise no. 48, (April 24 to May 8, 1953) giving positions for each gauze section of the 10-meter Recorder.

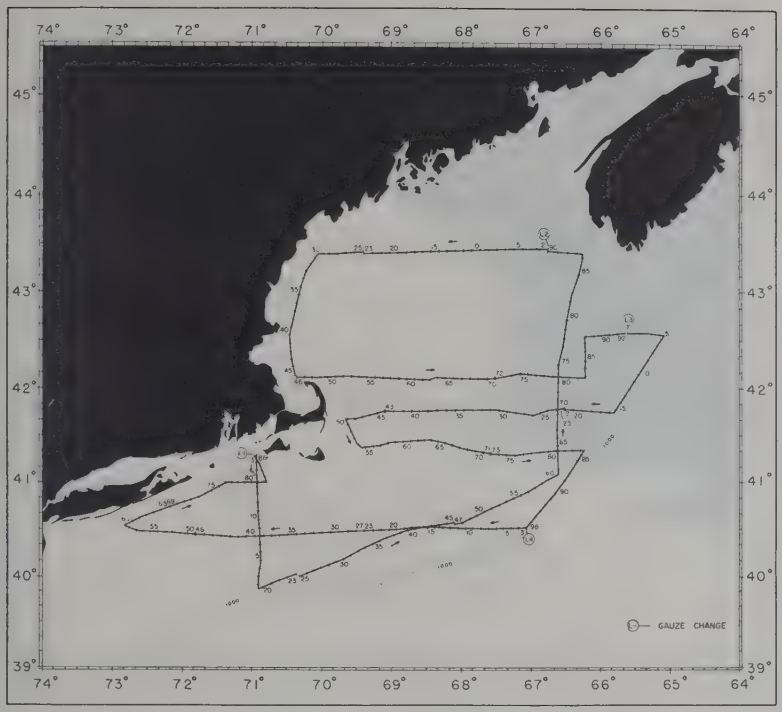

Figure 10.--Track of *Albatross III* cruise no. 50, (May 25 to June 3, 1953) giving positions for each gauze section of the surface Recorder.

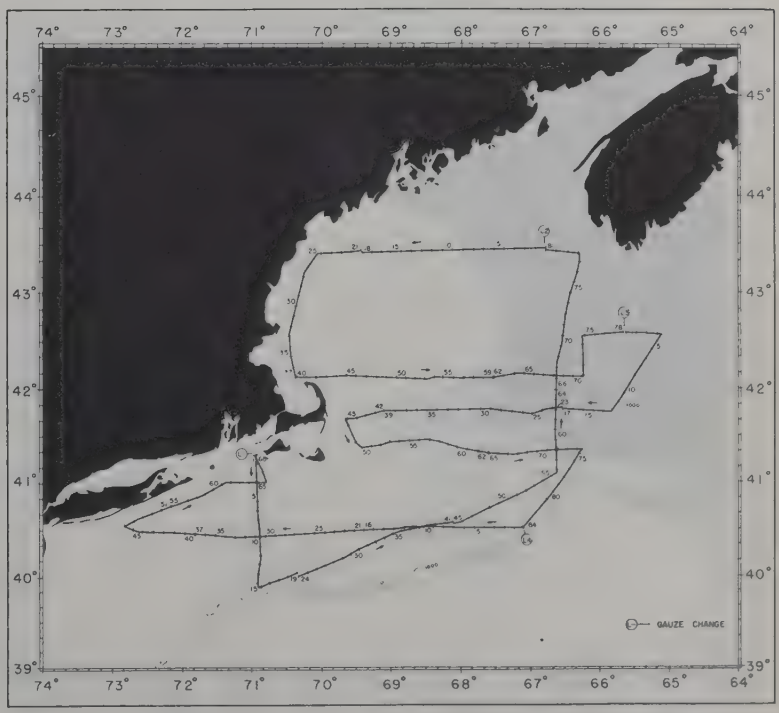

Figure 11.--Track of *Albatross III* cruise no. 50, (May 25 to June 3, 1953) giving positions for each gauze section of the 10-meter Recorder.

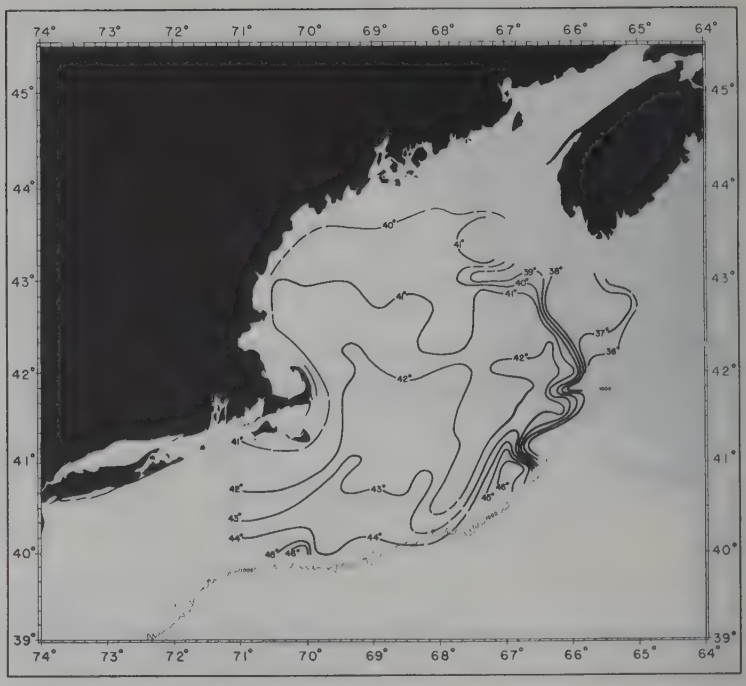

Figure 12.--Distribution of surface temperature, *Albatross III* cruise no. 46, March 19 to April 2, 1953.

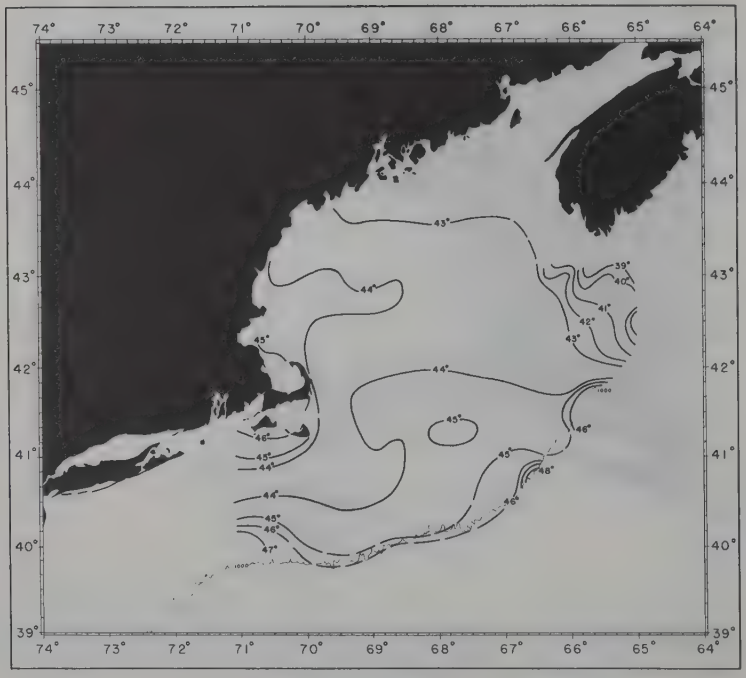

Figure 13.--Distribution of surface temperature, *Albatross III* cruise no. 48, first coverage, April 24 to May 2, 1953.

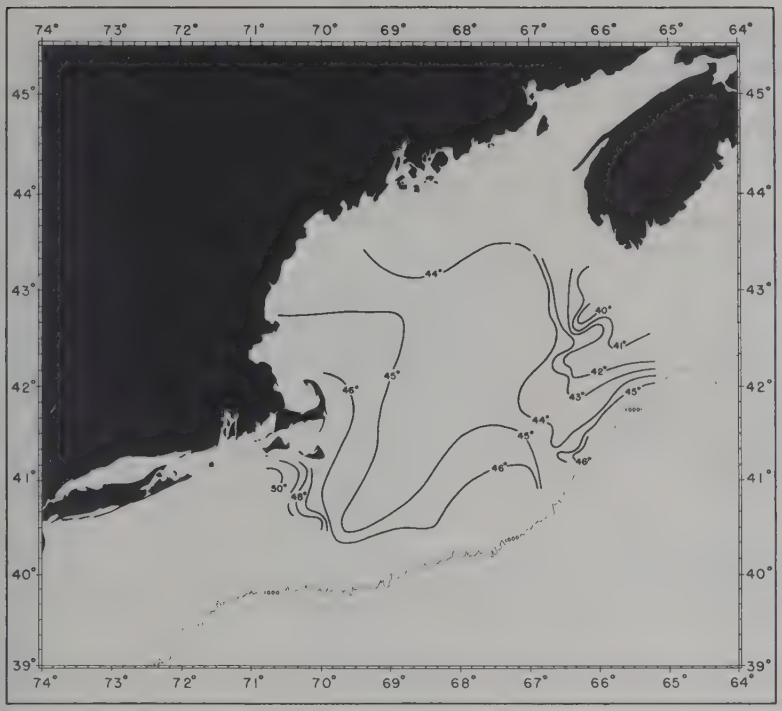

Figure 14.--Distribution of surface temperature, *Albatross III* cruise no. 48, second coverage, May 2 to 8, 1953.

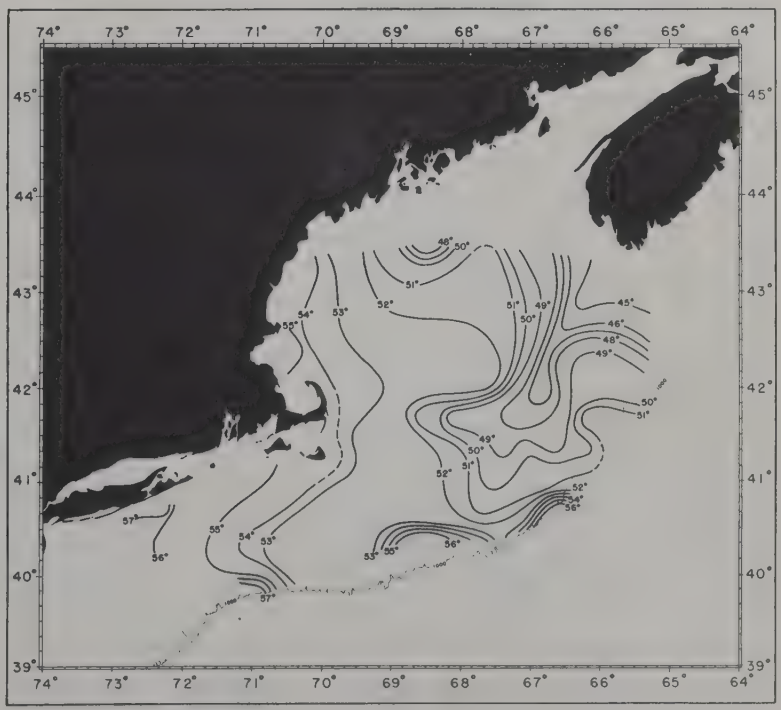

Figure 15.--Distribution of surface temperature, *Albatross III* cruise no. 50, May 25 to June 3, 1953.

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Table 1.--Species of fish eggs and larvae (with species code letters) caught during 1953, *Albatross III* cruise no. 46, March 19 to April 2; cruise no. 48, April 24 to May 8, cruise no. 50, May 25 to June 3

Species code letters	Common name	Scientific name
A	American plaice (dab)	*Hippoglossoides platessoides*
AL	Alligatorfish	*Aspidophoroides monopterygius*
AM	American sand lance	*Ammodytes americanus*
AR	Atlantic argentine	*Argentina silus*
BL	Bluefish	*Pomatomus saltatrix*
BU	Butterfish	*Poronotus triacanthus*
C	Atlantic cod	*Gadus morhua*
CN	Cunner	*Tautogolabrus adspersus*
CU	Cusk	*Brosme brosme*
E	American eel	*Anguilla rostrata*
G	Goosefish	*Lophius americanus*
H	Haddock	*Melanogrammus aeglefinus*
HE	Atlantic herring	*Clupea harengus harengus*
M	Atlantic mackerel	*Scomber scombrus*
MH	Atlantic menhaden	*Brevoortia tyrannus*
P	Pollock	*Pollachius virens*
R	Redfish	*Sebastes marinus*
RH	Squirrel hake	*Urophycis chuss*
RO	Fourbeard rockling	*Enchelyopus cimbrius*
S	Scup (porgy)	*Stenotomus chrysops*
SC	Longhorn sculpin	*Myoxocephalus octodecemspinosus*
SH	Silver hake	*Merluccius bilinearis*
SY	Shanny	*Stichaeidae* (Family)
U	Unidentified	
W	Wrymouth	*Cryptacanthodes maculatus*
WE	Weakfish	*Cynoscion regalis*
WF	Witch flounder	*Glyptocephalus cynoglossus*
WH	White hake	*Urophycis tenuis*
WI	Windowpane	*Scophthalmus aquosus*
WO	Atlantic wolffish	*Anarhichas lupus*
Y	Yellowtail flounder	*Limanda ferruginea*

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Table 1.--Species of fish eggs and larvae (with species code letters) caught during 1953, *Albatross III* cruise no. 46, March 19 to April 2; cruise no. 48, April 24 to May 8, cruise no. 50, May 25 to June 3

Species code letters	Common name	Scientific name
A	American plaice (dab)	*Hippoglossoides platessoides*
AL	Alligatorfish	*Aspidophoroides monopterygius*
AM	American sand lance	*Ammodytes americanus*
AR	Atlantic argentine	*Argentina silus*
BL	Bluefish	*Pomatomus saltatrix*
BU	Butterfish	*Poronotus triacanthus*
C	Atlantic cod	*Gadus morhua*
CN	Cunner	*Tautogolabrus adspersus*
CU	Cusk	*Brosme brosme*
E	American eel	*Anguilla rostrata*
G	Goosefish	*Lophius americanus*
H	Haddock	*Melanogrammus aeglefinus*
HE	Atlantic herring	*Clupea harengus harengus*
M	Atlantic mackerel	*Scomber scombrus*
MH	Atlantic menhaden	*Brevoortia tyrannus*
P	Pollock	*Pollachius virens*
R	Redfish	*Sebastes marinus*
RH	Squirrel hake	*Urophycis chuss*
RO	Fourbeard rockling	*Enchelyopus cimbrius*
S	Scup (porgy)	*Stenotomus chrysops*
SC	Longhorn sculpin	*Myoxocephalus octodecemspinosus*
SH	Silver hake	*Merluccius bilinearis*
SY	Shanny	*Stichaeidae* (Family)
U	Unidentified	
W	Wrymouth	*Cryptacanthodes maculatus*
WE	Weakfish	*Cynoscion regalis*
WF	Witch flounder	*Glyptocephalus cynoglossus*
WH	White hake	*Urophycis tenuis*
WI	Windowpane	*Scophthalmus aquosus*
WO	Atlantic wolffish	*Anarhichas lupus*
Y	Yellowtail flounder	*Limanda ferruginea*

Table 2.--Date, time, and position for temperature and salinity records in relation to 1-meter tows and Hardy Plankton Recorder gauze sections *Albatross III* cruise no. 46, March 19 to April 2, 1953--Continued

Date	Time	Latitude N.	Longitude W.	1-meter tow	Surface gauze section	10-meter gauze section	Surface		10-meter temperature
							Salinity	Temperature	
							‰	°F.	°F.
Mar. 28	0100	41° 15'	67° 35'	--	71	58	--	41.8	41.8
Mar. 28	0300	41° 15'	68° 01'	--	75	60	--	41.8	41.8
Mar. 28	0500	41° 15'	68° 28'	--	79	63	--	42.0	42.0
Mar. 28	0700	41° 16'	68° 54'	--	82	66	32.76	42.7	42.7
					loading 4				
Mar. 28	0915	41° 18'	69° 20'	15	1	69	32.76	42.2	42.2
						loading 4			
Mar. 28	1300	41° 00'	69° 16'	--	5	4	--	42.7	42.3
Mar. 29	0350	40° 35'	69° 09'	--	11	10	32.59	43.0	42.5
Mar. 29	0500	40° 35'	68° 50'	--	14	12	--	43.5	43.0
Mar. 29	0700	40° 39'	68° 33'	--	17	14	32.66	41.8	41.8
Mar. 29	0900	40° 45'	68° 11'	--	21	17	32.66	43.2	43.2
Mar. 29	1100	40° 47'	67° 47'	--	26	19	32.61	42.7	42.7
Mar. 29	1300	40° 47'	67° 24'	--	30	22	--	42.0	42.1
Mar. 29	1500	40° 46'	67° 02'	--	34	24	--	39.7	40.3
Mar. 29	1700	40° 45'	66° 41'	--	37	27	--	45.0	44.8
Mar. 29	1805	40° 46'	66° 35'	16	40	32	33.22	44.7	--
Mar. 29	1900	40° 53'	66° 34'	--	41	33	32.66	42.7	43.9
Mar. 29	2000	41° 02'	66° 34'	--	43	34	31.98	39.7	39.9
Mar. 29	2100	41° 12'	66° 34'	--	45	35	31.75	39.1	39.3
Mar. 29	2200	41° 23'	66° 32'	--	47	37	32.31	42.0	42.0
Mar. 29	2300	41° 34'	66° 29'	--	50	39	32.37	41.6	41.8
Mar. 29	2400	41° 43'	66° 27'	--	52	40	--	42.3	42.3
Mar. 30	0100	41° 52'	66° 24'	--	54	42	32.72	41.7	41.8
Mar. 30	0200	42° 00'	66° 20'	--	55	43	--	41.8	41.8
Mar. 30	0300	42° 08'	66° 19'	--	57	45	--	42.0	42.0
Mar. 30	0400	42° 15'	66° 15'	--	59	46	--	42.0	41.9
Mar. 30	0500	42° 25'	66° 12'	--	61	48	--	40.9	41.0
Mar. 30	0600	42° 35'	66° 11'	--	63	49	--	38.1	38.1
Mar. 30	0630	42° 38'	66° 12'	17	64	49	31.53	37.6	37.7
Mar. 30	0800	42° 40'	66° 31'	--	69	53	32.54	41.5	41.4
Mar. 30	0900	42° 42'	66° 47'	--	72	55	32.24	41.7	41.6
Mar. 30	1000	42° 41'	66° 58'	--	74	56	32.56	41.7	41.6
Mar. 30	1100	42° 43'	67° 11'	--	76	58	32.51	41.6	41.6
Mar. 30	1300	42° 45'	67° 37'	--	80	61	--	40.8	40.8
Mar. 30	1500	42° 47'	68° 04'	--	85	65	--	40.9	41.0
Mar. 30	1700	42° 45'	68° 29'	--	89	68	--	41.4	41.3
Mar. 30	1800	42° 43'	68° 43'	--	92	70	32.40	41.5	41.6
					loading 5				
Mar. 30	1900	42° 41'	68° 54'	18	2	72	32.51	41.2	41.2
Mar. 30	2100	42° 40'	69° 11'	--	5	73	--	41.5	41.6
Mar. 30	2300	42° 39'	69° 35'	--	9	76	32.52	41.7	41.7
Mar. 31	0100	42° 38'	70° 03'	--	14	80	--	41.2	--
Mar. 31	0300	42° 32'	70° 20'	--	18	82	--	41.2	41.1
Mar. 31	0500	42° 15'	70° 05'	--	21	85	--	41.0	41.3
Mar. 31	0700	42° 00'	69° 45'	--	25	89	32.37	41.5	41.6
Mar. 31	0815	42° 00'	69° 35'	19	29	90	32.46	41.7	41.7

Table 2.--Date, time, and position for temperature and salinity records in relation to 1-meter tows and Hardy Plankton Recorder gauze sections *Albatross III* cruise no. 46, March 19 to April 2, 1953--Continued

Date	Time	Latitude N.	Longitude W.	1-meter tow	Surface gauze section	10-meter gauze section	Surface		10-meter temperature
							Salinity	Temperature	
						loading 5	‰	°F.	°F.
Mar. 31	1000	42° 01'	69° 24'	--	30	2	32.30	41.3	41.3
Mar. 31	1100	42° 01'	69° 11'	--	32	3	32.54	42.5	42.2
Mar. 31	1300	42° 00'	68° 45'	--	35	6	--	42.5	42.3
Mar. 31	1500	42° 00'	68° 20'	--	41	9	--	41.8	41.7
Mar. 31	1700	42° 00'	67° 55'	--	45	12	--	42.1	42.0
Mar. 31	1900	42° 00'	67° 30'	--	49	15	32.67	42.3	42.3
Mar. 31	2115	42° 02'	67° 05'	20	55	20	32.67	41.9	41.9
Mar. 31	2300	42° 04'	66° 48'	--	58	22	32.65	41.8	--
April 1	0100	42° 02'	66° 23'	--	62	24	--	42.1	42.1
April 1	0300	41° 58'	65° 53'	--	66	28	--	41.5	41.7
April 1	0320	41° 58'	65° 52'	--	67	28	--	41.7	41.6
April 1	0500	41° 42'	65° 49'	--	70	31	--	39.7	39.9
April 1	0700	41° 30'	66° 03'	--	75	34	32.76	42.0	45.0
April 1	0830	41° 29'	66° 22'	--	78	36	--	40.3	--
April 1	0945	41° 30'	66° 39'	21	81	38	32.62	41.8	41.8
April 1	1100	41° 28'	66° 51'	--	83	41	32.57	41.7	41.8
April 1	1300	41° 20'	67° 13'	--	88	44	--	42.3	42.1
April 1	1500	41° 12'	67° 36'	--	90	47	--	42.2	42.2
April 1	1700	41° 03'	67° 55'	--	93	49	--	42.0	41.7
					loading 6				
April 1	1945	40° 56'	68° 33'	22	57	53	32.64	42.0	41.9
April 1	2100	40° 55'	68° 45'	--	58	--	--	42.3	42.3
April 1	2210	40° 49'	69° 00'	--	61	--	--	42.5	42.5
April 1	2300	40° 46'	69° 10'	--	62	--	--	42.5	42.7
April 1	2355	40° 43'	69° 19'	--	64	--	32.68	42.4	42.4
April 2	0730	41° 13'	70° 41'	23	76	--	--	--	--

Table 3.--Date, time and position for temperature and salinity records in relation to 1-meter tows and Hardy Plankton Recorder gauze sections *Albatross III* cruise no. 48, April 24 to May 8, 1953

Date	Time	Latitude N.	Longitude W.	1-meter tow	Surface gauze section	10-meter gauze section	Surface		10-meter temperature
							Salinity	Temperature	
					loading 1	loading 1	‰	°F.	°F.
April 24	1610	41° 17'	71° 00'	--	1	1	31.41	46.0	45.0
April 24	1800	41° 00'	71° 00'	--	4	3	30.35	44.6	44.4
April 24	2000	40° 43'	70° 53'	--	7	6	--	44.0	44.0
April 24	2400	40° 06'	71° 00'	--	14	12	--	47.1	47.8
April 25	0200	40° 02'	70° 39'	--	18	15	33.03	46.5	46.4
April 25	0410	39° 59'	70° 12'	--	22	18	--	45.7	45.5
April 25	0600	40° 01'	69° 48'	--	25	21	32.57	44.6	44.0
April 25	0800	40° 01'	69° 24'	1	28	24	--	44.5	44.3
April 25	0820	40° 01'	69° 21'	--	30	26	--	44.0	44.0
April 25	1000	40° 00'	69° 02'	--	32	28	--	44.4	44.2
April 25	1200	40° 00'	68° 35'	--	36	31	--	45.8	45.9
April 25	1300	40° 05'	68° 26'	--	37	33	32.58	44.7	44.3
April 25	1400	40° 12'	68° 13'	--	39	34	--	44.5	44.3
April 25	1500	40° 20'	68° 09'	--	41	36	--	44.1	44.0
April 25	1600	40° 28'	68° 02'	--	42	37	32.59	44.3	44.3
April 25	1700	40° 36'	67° 56'	--	44	39	--	44.0	43.7
April 25	1800	40° 46'	67° 48'	--	46	40	--	43.5	43.4
April 25	1900	40° 54'	67° 41'	--	48	42	--	44.2	44.2
April 25	2000	41° 04'	67° 28'	2	50	44	--	44.0	44.0
April 25	2100	41° 07'	67° 25'	--	53	47	--	43.0	42.6
April 25	2200	41° 15'	67° 17'	--	55	48	--	44.1	44.1
April 25	2300	41° 24'	67° 14'	--	56	50	--	44.3	44.3
April 25	2400	41° 33'	67° 12'	--	58	51	--	44.0	44.0
April 26	0100	41° 54'	67° 13'	--	62	54	32.69	44.0	44.1
April 26	0200	41° 55'	67° 14'	--	62	55	--	43.3	43.3
April 26	0300	42° 04'	67° 15'	--	64	56	--	42.7	42.7
April 26	0400	42° 14'	67° 15'	--	65	58	32.57	42.8	42.7
April 26	0500	42° 24'	67° 16'	--	67	59	--	43.2	43.1
April 26	0600	42° 31'	67° 16'	--	69	60	32.63	42.9	43.0
April 26	0800	42° 50'	67° 16'	--	72	63	--	43.8	43.8
April 26	0900	42° 58'	67° 16'	--	74	65	--	42.9	42.9
April 26	1000	43° 04'	67° 13'	3	75	67	--	43.6	43.5
April 26	1100	43° 11'	67° 14'	--	77	69	--	43.5	43.5
April 26	1200	43° 25'	67° 15'	--	79	71	--	42.7	42.6
April 26	1300	43° 35'	67° 16'	--	81	72	32.37	42.6	42.6
April 26	1410	43° 39'	67° 28'	--	83	74	32.38	43.0	43.3
April 26	1600	43° 40'	67° 48'	--	85	76	32.01	42.1	42.0
April 26	1800	43° 40'	68° 14'	--	89	79	31.97	42.8	42.0
April 26	2000	43° 39'	68° 50'	--	93	83	--	43.0	43.0
April 26	2200	43° 39'	69° 13'	--	96	86	--	42.5	42.4
					loading 2	loading 2			
April 26	2400	43° 39'	69° 35'	4	1	1	--	43.3	42.8
April 27	0200	43° 31'	69° 50'	--	3	3	30.39	43.3	42.0
April 27	0300	43° 30'	69° 54'	--	4	4	29.83	43.4	42.4
April 27	0400	43° 25'	70° 02'	--	5	5	--	43.2	43.1
April 27	0500	43° 11'	70° 18'	--	9	7	--	43.3	42.3
April 27	0600	43° 09'	70° 22'	--	9	8	30.23	43.4	42.7

Table 3.--Date, time and position for temperature and salinity records in relation to 1-meter tows and Hardy Plankton Recorder gauze sections *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Date	Time	Latitude N.	Longitude W.	1-meter tow	Surface gauze section	10-meter gauze section	Surface		10-meter temperature
							Salinity	Temperature	
							‰	°F.	°F.
April 27	0720	43° 00'	70° 34'	--	11	10	29.25	44.3	43.7
April 27	0800	43° 01'	70° 23'	--	13	11	--	43.4	42.5
April 27	1000	43° 01'	69° 48'	--	17	15	--	44.5	--
April 27	1200	43° 00'	69° 22'	5	20	18	--	44.0	43.1
April 27	1325	42° 58'	69° 14'	--	21	18	31.03	43.7	42.6
April 27	1430	42° 58'	69° 00'	--	24	25	--	43.4	42.6
April 27	1600	42° 59'	68° 33'	--	28	28	--	42.9	42.8
April 27	1800	43° 00'	68° 17'	--	29	29	32.42	43.0	43.0
April 27	2000	43° 00'	67° 59'	--	32	31	--	43.0	43.0
April 27	2200	43° 00'	67° 13'	--	38	36	--	43.0	42.8
April 27	2400	43° 00'	66° 42'	--	43	40	--	43.5	43.5
April 28	0200	43° 02'	66° 13'	--	46	43	32.27	41.9	41.9
April 28	0300	43° 02'	66° 08'	--	47	44	--	41.6	41.6
April 28	0400	43° 01'	65° 57'	--	48	45	32.44	42.2	42.2
April 28	0500	43° 01'	65° 42'	--	50	47	--	39.7	39.8
April 28	0600	43° 02'	65° 30'	--	52	48	31.32	38.9	39.4
April 28	0700	43° 02'	65° 12'	--	54	50	--	39.9	39.8
April 28	0820	43° 03'	65° 03'	6	55	51	--	39.3	39.3
April 28	1000	42° 52'	64° 57'	--	57	56	--	39.9	40.6
April 28	1100	42° 42'	64° 55'	--	59	57	--	40.1	40.1
April 28	1200	42° 34'	64° 55'	--	60	58	--	38.4	38.4
April 28	1300	42° 26'	64° 53'	--	61	59	--	38.6	38.6
April 28	1445	42° 12'	64° 53'	--	63	61	31.80	40.8	40.8
April 28	1600	42° 12'	65° 13'	--	66	63	--	42.7	42.7
April 28	1700	42° 11'	65° 20'	--	67	64	--	41.8	--
April 28	1800	42° 14'	65° 40'	--	69	66	31.27	38.8	--
April 28	1910	42° 13'	65° 52'	--	70	67	--	43.0	43.0
April 28	2100	42° 14'	66° 09'	--	72	70	--	43.3	43.3
April 28	2300	42° 16'	66° 24'	7	76	71	--	43.3	43.3
April 29	0100	42° 15'	66° 45'	--	78	73	32.66	43.0	--
April 29	0200	42° 14'	67° 00'	--	80	75	--	43.2	43.2
April 29	0300	42° 14'	67° 08'	--	81	76	--	42.7	42.6
April 29	0400	42° 14'	67° 20'	--	83	77	--	43.0	43.0
April 29	0500	42° 13'	67° 25'	--	84	78	--	43.0	43.0
April 29	0600	42° 13'	67° 36'	--	85	79	32.69	43.2	43.2
April 29	0815	42° 13'	67° 52'	--	87	80	--	43.1	43.1
April 29	0915	42° 13'	68° 06'	--	89	82	--	43.2	43.2
April 29	1015	42° 13'	68° 24'	--	92	84	--	43.3	43.2
April 29	1155	42° 12'	68° 30'	--	92 loading 3	85 loading 3	--	43.5	43.5
April 29	1330	42° 11'	68° 37'	8	1	1	32.57	43.5	43.5
April 29	1530	42° 12'	68° 47'	--	2	2	--	43.3	43.2
April 29	1630	42° 12'	69° 03'	--	4	4	--	43.4	43.4
April 29	1800	42° 12'	69° 20'	--	6	6	32.05	43.5	43.3
April 29	1900	42° 13'	69° 38'	--	8	8	--	43.7	43.7
April 29	2000	42° 13'	69° 51'	--	10	9	--	43.6	43.8
April 29	2200	42° 14'	70° 24'	--	14	13	29.83	44.6	--

Table 3.--Date, time and position for temperature and salinity records in relation to 1-meter tows and Hardy Plankton Recorder gauze sections *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Date	Time	Latitude N.	Longitude W.	1-meter tow	Surface gauze section	10-meter gauze section	Surface		10-meter temperature
							Salinity	Temperature	
							‰	°F.	°F.
April 29	2350	42° 14'	70° 31'	9	15	14	--	44.8	44.2
April 29	2400	42° 14'	70° 21'	--	19	18	--	44.8	44.8
April 30	0100	42° 10'	70° 15'	--	19	19	--	44.6	44.6
April 30	0130	42° 11'	70° 12'	--	20	19	--	44.3	44.2
April 30	0200	42° 08'	70° 03'	--	21	20	30.88	44.3	44.1
April 30	0230	42° 07'	70° 00'	--	21	21	--	44.2	44.2
April 30	0530	41° 44'	69° 50'	--	26	25	--	44.1	44.1
April 30	0700	41° 44'	69° 27'	--	28	27	--	43.6	43.6
April 30	0800	41° 43'	69° 13'	--	30	29	--	43.8	43.3
April 30	0900	41° 46'	69° 02'	--	32	30	--	43.8	43.3
April 30	1000	41° 45'	68° 40'	--	34	33	--	44.2	43.9
April 30	1100	41° 45'	68° 35'	--	35	33	--	44.2	43.9
April 30	1200	41° 47'	68° 20'	10	37	35	--	43.7	43.0
April 30	1245	41° 47'	68° 17'	--	37	38	--	44.4	44.4
April 30	1400	41° 46'	68° 02'	--	40	39	32.61	44.4	44.2
April 30	1500	41° 45'	67° 50'	--	42	41	--	44.1	44.1
April 30	1600	41° 44'	67° 36'	--	44	43	--	44.4	44.4
April 30	1700	41° 43'	67° 22'	--	45	44	--	44.4	44.2
April 30	1800	41° 42'	67° 08'	--	47	46	--	44.2	44.3
April 30	2000	41° 42'	66° 43'	--	51	49	--	44.3	44.3
April 30	2100	41° 44'	66° 31'	--	53	51	--	43.5	43.7
April 30	2200	41° 47'	66° 21'	--	54	52	--	42.7	42.5
April 30	2300	41° 48'	66° 05'	--	56	54	--	43.0	43.2
April 30	2400	41° 47'	65° 49'	11	58	56	--	43.6	43.2
May 1	0110	41° 46'	65° 42'	--	59	56	--	45.8	45.1
May 1	0200	41° 39'	65° 42'	--	63	60	33.08	46.7	46.6
May 1	0300	41° 31'	65° 50'	--	64	61	--	46.3	46.7
May 1	0450	41° 17'	65° 59'	--	67	63	32.73	44.6	43.8
May 1	0600	41° 16'	66° 16'	--	70	65	--	44.5	43.9
May 1	0900	41° 16'	66° 56'	--	75	70	--	44.5	44.5
May 1	1100	41° 18'	67° 23'	--	79	73	--	45.8	--
May 1	1300	41° 17'	67° 48'	--	82	76	32.58	45.3	45.3
May 1	1400	41° 16'	68° 01'	--	85	78	--	45.1	45.0
May 1	1500	41° 16'	68° 11'	--	86	79	--	44.4	44.2
May 1	1600	41° 11'	68° 21'	--	87	80	--	44.1	44.1
May 1	1800	41° 08'	68° 39'	--	90	82	--	43.5	43.5
May 1	1930	41° 07'	68° 52'	--	92	84	--	43.9	44.0
					loading 4	loading 4			
May 1	2140	41° 11'	69° 15'	12	1	1	32.34	43.2	43.2
May 2	0130	40° 46'	69° 11'	--	5	5	--	43.3	43.4
May 2	0330	40° 43'	68° 50'	--	8	8	--	43.5	43.5
May 2	0530	40° 40'	68° 39'	--	9	9	--	43.2	43.2
May 2	0700	40° 39'	68° 10'	--	13	13	32.65	44.2	44.3
May 2	0900	40° 43'	67° 47'	--	16	16	--	44.5	44.5
May 2	1110	40° 47'	67° 32'	13	18	20	32.61	44.5	44.5
May 2	1300	40° 48'	67° 11'	--	22	22	--	44.5	44.5
May 2	1500	40° 48'	66° 44'	--	26	25	--	45.0	44.9
May 2	1600	40° 48'	66° 29'	--	28	27	33.21	48.4	48.8

Table 3.--Date, time and position for temperature and salinity records in relation to 1-meter tows and Hardy Plankton Recorder gauze sections *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Date	Time	Latitude N.	Longitude W.	1-meter tow	Surface gauze section	10-meter gauze section	Surface		10-meter temperature
							Salinity	Temperature	
							‰	°F.	°F.
May 2	1700	40° 56'	66° 29'	--	29	28	--	44.5	44.6
May 2	1800	41° 05'	66° 28'	--	30	29	--	44.4	44.3
May 2	1900	41° 13'	66° 28'	--	32	30	--	43.5	43.5
May 2	2000	41° 22'	66° 27'	--	33	31	--	43.5	43.5
May 2	2100	41° 31'	66° 27'	--	35	32	32.72	43.5	43.5
May 2	2200	41° 41'	66° 26'	--	37	34	--	43.2	43.2
May 2	2300	41° 52'	66° 26'	--	39	36	--	43.2	43.0
May 2	2400	42° 02'	66° 25'	--	40	37	--	43.3	43.3
May 3	0100	42° 09'	66° 22'	14	42	40	--	42.7	--
May 3	0200	42° 18'	66° 18'	--	44	42	--	40.8	40.9
May 3	0300	42° 28'	66° 14'	--	46	43	--	43.0	43.0
May 3	0400	42° 37'	66° 10'	--	47	45	--	39.8	39.9
May 3	0500	42° 46'	66° 07'	--	49	46	--	39.7	40.0
May 3	0600	42° 55'	66° 04'	--	50	48	--	40.8	40.8
May 3	0700	43° 02'	66° 03'	--	51	49	31.61	40.5	41.1
May 3	0800	43° 13'	66° 02'	--	54	51	--	40.3	41.1
May 3	0845	43° 19'	66° 01'	--	55	51	31.29	41.1	41.1
May 3	0945	43° 20'	66° 17'	--	56	53	--	42.2	42.0
May 3	1100	43° 21'	66° 38'	--	59	56	--	42.7	42.1
May 3	1230	43° 22'	67° 04'	--	63	59	32.44	44.2	42.4
May 3	1305	43° 22'	67° 01'	15	63	59	32.42	44.9	44.1
May 3	1500	43° 22'	67° 24'	--	66	62	--	44.7	43.3
May 3	1700	43° 21'	67° 51'	--	69	65	--	44.2	42.4
May 3	1900	43° 19'	68° 15'	--	73	68	--	43.5	43.5
May 3	2100	43° 18'	68° 40'	--	76	71	--	43.4	42.9
May 3	2300	43° 18'	69° 07'	--	79	73	--	44.0	43.8
May 4	0100	43° 17'	69° 35'	--	82	76	--	44.5	44.3
May 4	0300	43° 17'	70° 04'	--	86	80	--	44.4	44.4
May 4	0500	43° 17'	70° 31'	--	89	82	--	44.4	44.3
May 4	0700	42° 53'	70° 33'	--	94	86	30.26	44.7	44.6
May 4	0830	42°42.5'	70°33.5'	16	95	87	28.50	45.3	44.9
					loading 5	loading 5			
May 4	1050	42° 41'	70° 11'	--	3	3	--	45.3	44.0
May 4	1210	42° 40'	70° 00'	--	4	4	--	45.2	42.7
May 4	1300	42° 40'	69° 50'	--	6	5	--	45.3	43.0
May 4	1500	42° 39'	69° 23'	--	9	8	--	45.5	43.7
May 4	1700	42° 39'	68° 50'	--	13	12	--	44.7	44.6
May 4	1900	42° 40'	68° 26'	--	16	15	32.47	44.2	44.2
May 4	2100	42° 41'	68°00.5'	--	20	18	--	44.3	44.3
May 4	2300	42° 41'	67° 29'	--	24	21	32.46	43.8	43.8
May 5	0100	42° 40'	67° 02'	--	27	24	--	43.9	44.3
May 5	0300	42° 39'	66° 32'	--	31	28	--	43.9	43.9
May 5	0500	42° 43'	65° 57'	17	36	31	--	40.5	40.5
May 5	0600	42° 42'	65° 53'	--	38	35	32.10	41.9	41.9
May 5	0800	42° 37'	65° 30'	--	41	37	--	40.7	40.7
May 5	0900	42° 34'	65° 18'	--	43	39	--	40.7	40.7
May 5	1000	42° 31'	65° 07'	--	45	40	--	41.3	41.2

Table 3.--Date, time and position for temperature and salinity records in relation to 1-meter tows and Hardy Plankton Recorder gauze sections *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Date	Time	Latitude N.	Longitude W.	1-meter tow	Surface gauze section	10-meter gauze section	Surface		10-meter temperature
							Salinity	Temperature	
							‰	°F.	°F.
May 5	1030	42° 30'	65° 00'	--	46	41	--	40.9	40.9
May 5	1100	42° 26'	65° 00'	--	47	42	--	41.1	40.9
May 5	1200	42° 19'	65° 00'	--	48	43	--	41.0	41.0
May 5	1400	42°00.5'	65° 00'	--	51	45	--	45.4	45.3
May 5	1600	42°00.5'	65° 25'	--	55	48	--	45.0	44.8
May 5	1800	42°00.5'	65° 46'	--	58	51	--	42.9	43.3
May 5	1915	42°00.5'	66° 00'	18	59	55	--	42.5	42.9
May 5	2100	42° 00'	66° 24'	--	63	57	32.69	43.4	43.0
May 5	2200	42° 00'	66° 38'	--	65	59	--	43.4	43.5
May 5	2300	42° 00'	66° 53'	--	67	60	--	43.7	43.8
May 5	2400	42° 00'	67° 06'	--	68	62	32.57	43.9	43.8
May 6	0200	42° 00'	67° 35'	--	72	65	--	44.2	44.2
May 6	0400	42° 01'	68° 00'	--	75	68	--	44.6	44.6
May 6	0600	42°00.5'	68° 29'	--	78	71	--	44.5	44.3
May 6	0700	42° 00'	68° 42'	--	80	72	32.47	44.2	44.1
May 6	0835	41° 59'	68° 54'	19	83	73	--	44.2	44.0
May 6	0945	41° 58'	69° 07'	--	84	77	--	45.4	44.4
May 6	1045	41° 57'	69° 19'	--	86	78	--	45.0	43.8
May 6	1215	41° 55'	69° 35'	--	88	80	31.19	46.0	44.3
May 6	1225	41° 55'	69° 42'	--	89	81	--	45.5	44.5
May 6	1400	41° 42'	69° 36'	--	92	83	--	46.0	44.1
May 6	1600	41° 31'	69° 21'	--	96	86	--	45.3	44.1
May 6	1800	41° 38'	68° 54'	20	99	89	--	44.3	44.0
					loading 6	loading 6			
May 6	2000	41° 37'	68° 41'	--	2	2	--	44.8	45.1
May 6	2200	41° 27'	68° 16'	--	6	5	32.52	44.4	44.2
May 6	2400	41° 25'	67° 52'	--	9	7	--	45.6	45.1
May 7	0200	41° 25'	67° 25'	--	13	10	--	45.3	45.3
May 7	0400	41° 28'	67° 02'	--	16	13	--	44.8	44.8
May 7	0600	41° 32'	66° 34'	--	20	16	--	44.5	43.7
May 7	0705	41° 31'	66° 19'	21	21	18	32.65	44.0	42.8
May 7	0830	41° 30'	66° 01'	--	25	20	32.86	46.2	45.8
May 7	0930	41° 25'	66° 10'	--	26	25	--	44.5	44.0
May 7	1000	41° 22'	66° 16'	--	27	26	--	44.3	44.3
May 7	1030	41° 19'	66° 21'	--	28	27	--	45.6	43.9
May 7	1100	41° 16'	66° 26'	--	29	28	--	46.1	45.4
May 7	1300	41° 06'	66° 52'	--	33	30	--	46.0	44.8
May 7	1500	40° 59'	67° 14'	--	36	33	--	45.8	44.7
May 7	1700	40° 49'	67° 14'	--	40	36	--	46.0	45.7
May 7	1900	40° 38'	68° 03'	--	43	39	--	46.3	45.6
May 7	2100	40° 41'	68° 13'	22	45	40	32.53	46.2	45.2
May 7	2300	40° 39'	68° 24'	--	48	44	--	45.6	45.6
May 7	2400	40° 38'	68° 49'	--	51	48	--	46.1	45.0

Table 3.--Date, time and position for temperature and salinity records in relation to 1-meter tows and Hardy Plankton Recorder gauze sections *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Date	Time	Latitude N.	Longitude W.	1-meter tow	Surface gauze section	10-meter gauze section	Surface		10-meter temperature
							Salinity	Temperature	
							‰	°F.	°F.
May 8	0200	40°36.5'	69° 33'	--	57	53	--	45.2	44.8
May 8	0400	40° 36'	69° 49'	--	59	55	--	45.9	45.6
May 8	0600	40° 37'	69°59.5'	--	61	57	--	47.4	45.9
May 8	0800	40° 46'	70° 05'	--	64	59	--	46.5	45.8
May 8	1000	41° 04'	70° 15'	--	68	63	--	47.8	47.9
May 8	1200	41° 07'	70° 37'	--	71	66	31.41	49.9	49.5
May 8	1235	41° 07'	70° 43'	23	71	66	--	49.3	46.6

Table 4.--Date, time, and position for temperature and salinity records in relation to 1-meter tows and Hardy Plankton Recorder gauze sections *Albatross III* cruise no. 50, May 25 to June 3, 1953

Date	Time	Latitude N.	Longitude W.	1-meter tow	Surface gauze section	10-meter gauze section	Surface		10-meter temperature
							Salinity	Temperature	
					loading 1	loading 1	‰	°F.	°F.
May 25	1535	41° 17'	71° 01'	--	3	1	--	55.3	52.7
May 25	1700	41°05.5'	71° 01'	--	5	2	--	55.1	53.0
May 25	1800	40° 55'	71° 00'	--	7	4	--	54.0	52.8
May 25	1900	40° 44'	70° 59'	--	9	6	--	54.5	53.9
May 25	2000	40° 37'	70° 59'	--	11	8	32.10	54.2	53.5
May 25	2100	40° 24'	70° 58'	--	13	10	--	53.6	52.7
May 25	2300	40° 07'	70° 58'	--	16	12	--	53.8	53.8
May 26	0005	39° 57'	70° 59'	--	18	14	--	57.2	56.9
May 26	0100	39° 50'	70° 58'	--	19	15	--	55.8	55.7
May 26	0300	39° 56'	70° 36'	--	22	18	--	50.0	49.9
May 26	0430	39° 58'	70° 24.5'	1	25	24	--	50.3	50.3
May 26	0630	40° 03'	70° 04'	--	27	26	--	50.2	50.2
May 26	0830	40° 11'	69° 41'	--	31	29	--	50.2	49.9
May 26	1000	40° 16'	69° 26'	--	33	31	--	50.8	50.3
May 26	1200	40° 24'	69° 03'	--	36	34	32.60	52.3	48.5
May 26	1400	40° 30'	68° 38'	--	41	37	--	50.8	49.8
May 26	1600	40° 33'	68° 10'	--	45	41	--	50.3	49.3
May 26	1700	40° 33'	68° 06'	2	47	45	--	50.7	48.5
May 26	1900	40° 38'	67° 46'	--	50	47	--	50.5	49.5
May 26	2100	40° 46'	67° 23'	--	53	50	--	50.4	50.0
May 26	2330	40° 37'	66° 53'	--	58	54	32.54	48.3	47.1
May 27	0130	41° 04'	66°35.5'	--	60	56	--	51.3	51.4
May 27	0400	41° 16'	66° 34'	--	63	58	--	47.7	47.8
May 27	0600	41° 35'	66° 35'	--	68	61	--	46.4	46.3
May 27	0800	41° 55'	66° 35'	3	71	63	--	48.0	47.5
May 27	1000	42° 12'	66° 34'	--	74	67	--	49.3	48.9
May 27	1100	42° 23'	66°31.5'	--	76	69	--	48.4	48.4
May 27	1200	42° 32'	66° 29'	--	77	70	32.39	47.7	47.9
May 27	1300	42° 40'	66° 27'	--	79	71	--	46.5	46.7
May 27	1400	42° 49'	66° 25'	--	80	73	--	46.8	45.3
May 27	1500	43° 02'	66° 22'	--	82	75	--	45.0	45.0
May 27	1600	43° 09'	66° 19'	--	84	76	--	45.6	45.4
May 27	1700	43° 16'	66° 15'	--	85	77	--	45.6	43.7
May 27	1800	43°24.5'	66° 12'	--	87	78	--	45.6	44.9
May 27	2000	43° 29'	66° 31'	4	89	80	--	45.8	44.8
					loading 2	loading 2			
May 27	2200	43° 31'	66°44.5'	--	2	1	32.22	48.4	47.8
May 27	2400	43° 31'	67° 13'	--	6	4	--	46.4	45.9
May 28	0200	43° 30'	67° 40'	--	9	7	--	50.8	50.1
May 28	0400	43°29.5'	68° 02'	--	13	9	--	50.0	48.8
May 28	0600	43° 29'	68° 34'	--	17	13	--	48.2	46.2
May 28	0800	43° 28'	68° 59'	--	20	15	--	50.6	49.6
May 28	0900	43° 28'	69° 12'	5	22	17	31.91	50.6	49.9
May 28	1115	43° 28'	69° 37'	--	26	21	--	52.2	52.0
May 28	1200	43° 27'	69° 48'	--	28	23	--	51.8	50.4
May 28	1400	43° 24'	70° 11'	--	31	25	--	52.9	51.3
May 28	1600	43° 07'	70° 21'	--	34	28	--	53.9	52.4

Table 4.--Date, time, and position for temperature and salinity records in relation to 1-meter tows and Hardy Plankton Recorder gauze sections *Albatross III* cruise no. 50, May 25 to June 3, 1953--Continued

Date	Time	Latitude N.	Longitude W.	1-meter tow	Surface gauze section	10-meter gauze section	Surface		10-meter temperature
							Salinity	Temperature	
							‰	°F.	°F.
May 28	1800	42°47.5'	70° 27'	--	38	32	--	53.5	52.0
May 28	2000	42° 27'	70° 30'	--	43	35	--	55.5	54.8
May 28	2135	42°11.5'	70° 27'	6	45	37	29.84	54.0	52.0
May 28	2400	42° 09'	70° 05'	--	48	41	--	54.2	53.4
May 29	0200	42° 09'	69° 38'	--	52	45	--	52.4	52.3
May 29	0400	42° 08'	69° 15'	--	55	47	--	53.0	51.0
May 29	0600	42°07.5'	68° 49'	--	59	50	--	51.5	51.4
May 29	0800	42°07.5'	68° 25'	--	63	53	--	52.3	52.4
May 29	0900	42° 08'	68° 12'	--	65	55	--	51.8	50.7
May 29	1000	42°07.5'	67° 58'	--	66	56	31.65	52.3	52.3
May 29	1200	42°07.5'	67° 34'	7	70	59	--	52.1	51.8
May 29	1400	42°10.5'	67° 11'	--	74	64	--	48.9	48.7
May 29	1600	42° 10'	66° 41'	--	78	67	--	50.2	49.4
May 29	1800	42° 08'	66° 15'	--	82	70	--	49.5	48.5
May 29	1900	42° 13'	66° 10'	--	83	71	--	50.2	49.2
May 29	2000	42° 23'	66° 10'	--	85	73	--	50.0	49.6
May 29	2055	42° 32'	66° 10'	--	87	74	--	47.8	49.5
May 29	2130	42° 40'	66° 07'	--	88	75	--	47.3	46.5
May 29	2230	42° 36'	65° 57'	--	89	76	--	48.0	47.3
May 29	2400	42° 37'	65° 38'	--	92	78	--	46.5	--
					loading 3	loading 3			
May 30	0200	42° 37'	65° 30'	8	1	1	--	46.3	46.1
May 30	0400	42° 36'	65° 05'	--	4	4	--	45.3	45.4
May 30	0600	42° 23'	65° 13'	--	8	6	--	47.5	48.0
May 30	0800	42° 06'	65° 27'	--	11	9	--	49.5	49.6
May 30	0900	41° 58'	65° 34'	--	13	10	32.51	49.5	49.7
May 30	1000	41° 55'	65° 41'	--	15	11	--	50.2	49.0
May 30	1100	41° 46'	65° 51'	--	17	13	--	50.5	46.3
May 30	1200	41° 46'	66° 02'	--	18	14	32.42	50.9	49.1
May 30	1300	41° 47'	66° 13'	--	19	16	--	50.8	49.1
May 30	1400	41° 47'	66° 29'	9	21	17	--	48.0	47.9
May 30	1500	41° 47'	66° 34'	--	23	23	--	48.8	47.9
May 30	1600	41° 46'	66° 45'	--	25	24	--	48.8	47.7
May 30	1700	41° 44'	66° 56'	--	26	25	--	47.5	46.3
May 30	1800	41° 45'	67°07.5'	--	28	27	--	47.5	47.4
May 30	1900	41° 46'	67° 19'	--	30	28	--	48.3	47.4
May 30	2000	41° 47'	67°30.5'	--	31	29	--	49.0	49.2
May 30	2100	41° 47'	67° 49'	--	33	31	32.48	48.7	48.7
May 30	2200	41° 47'	68° 08'	--	36	33	--	48.1	48.2
May 30	2300	41° 47'	68° 16'	--	37	34	--	48.9	48.1
May 31	0005	41° 47'	68° 25'	--	38	35	--	50.7	49.7
May 31	0100	41° 47'	68° 43'	--	40	37	--	50.8	51.4
May 31	0200	41° 47'	69° 00'	--	43	39	--	52.8	51.8
May 31	0300	41° 46'	69° 08'	10	45	42	--	52.2	51.3
May 31	0400	41° 44'	69° 19'	--	46	43	--	52.8	50.8
May 31	0500	41°42.5'	69° 31'	--	48	44	--	53.5	53.1
May 31	0600	41°41.5'	69° 40'	--	49	45	--	53.9	52.3

Table 4.--Date, time, and position for temperature and salinity records in relation to 1-meter tows and Hardy Plankton Recorder gauze sections *Albatross III* cruise no. 50, May 25 to June 3, 1953--Continued

Date	Time	Latitude N.	Longitude W.	1-meter tow	Surface gauze section	10-meter gauze section	Surface		10-meter temperature
							Salinity	Temperature	
							‰	°F.	°F.
May 31	0700	41° 41'	69° 48'	--	50	46	--	53.7	53.5
May 31	0800	41° 43'	69° 40'	--	52	47	--	51.2	49.3
May 31	0900	41° 25'	69° 32'	--	53	49	31.22	51.7	50.3
May 31	1015	41° 23'	69° 20'	11	55	50	--	51.7	49.0
May 31	1100	41° 24'	69° 12'	--	57	52	--	53.6	52.1
May 31	1200	41° 26'	69° 02'	--	58	53	32.17	52.7	52.0
May 31	1300	41° 27'	68° 48'	--	60	54	--	52.3	51.1
May 31	1400	41° 27'	68° 37'	--	62	56	--	50.5	49.6
May 31	1500	41° 27'	68° 24'	--	64	57	--	51.5	49.1
May 31	1600	41° 24'	68° 09'	--	66	59	--	51.5	48.3
May 31	1700	41° 20'	67° 56'	--	69	60	--	50.1	48.8
May 31	1800	41° 19'	67° 41'	--	71	62	--	49.8	49.5
May 31	1900	41° 18'	67° 33'	12	73	65	--	49.5	48.4
May 31	2000	41° 18'	67° 22'	--	74	66	--	48.9	48.8
May 31	2100	41° 18'	67° 11'	--	76	67	32.60	48.2	48.0
May 31	2155	41° 18'	67° 01'	--	77	69	--	50.2	48.1
May 31	2300	41° 19'	66° 47'	--	79	70	--	49.7	48.7
May 31	2400	41° 20'	66° 36'	--	81	71	32.66	49.0	48.3
June 1	0100	41° 21'	66° 24'	--	82	73	--	49.7	47.6
June 1	0205	41° 20'	66° 12'	--	84	74	--	50.2	49.7
June 1	0305	41° 15'	66° 18'	--	85	75	--	50.7	50.7
June 1	0405	41° 05'	66° 24'	--	87	77	--	50.8	50.7
June 1	0500	40° 58'	66° 31'	--	90	79	--	50.0	50.1
June 1	0600	40° 50'	66° 40'	--	91	80	--	59.1	59.1
June 1	0700	40° 42'	66° 49'	--	93	81	--	59.0	59.0
June 1	0800	40° 33'	66° 59'	13	96	84	--	52.4	52.4
					loading 4	loading 4			
June 1	0945	40° 29'	67° 03'	--	3	1	33.93	56.0	55.4
June 1	1100	40° 29'	67° 19'	--	5	2	--	54.4	54.3
June 1	1200	40° 29'	67° 34'	--	7	4	32.63	51.8	51.4
June 1	1300	40° 29'	67° 47'	--	9	5	--	53.0	55.2
June 1	1400	40° 29'	68° 01'	--	12	7	--	53.9	52.1
June 1	1500	40° 30'	68° 14'	--	13	8	--	55.0	54.0
June 1	1600	40° 30'	68° 24'	--	15	9	--	55.3	53.1
June 1	1700	40° 30'	68° 37'	--	17	11	--	55.5	53.5
June 1	1805	40° 29'	68° 51'	--	19	12	--	55.0	54.6
June 1	1905	40° 28'	69° 01'	--	20	14	--	54.7	52.5
June 1	2000	40° 28'	69° 13'	--	22	15	--	54.5	54.0
June 1	2130	40°27.5'	69° 27'	14	27	21	32.55	53.1	51.0
June 1	2300	40° 27'	69° 46'	--	29	23	--	53.0	52.7
June 1	2400	40°26.5'	69° 59'	--	31	24	--	52.5	50.7
June 2	0205	40°25.5'	70° 23'	--	34	27	--	52.3	51.8
June 2	0300	40° 25'	70° 35'	--	36	28	--	52.7	52.4
June 2	0400	40°24.5'	70° 47'	--	38	30	--	52.3	50.5
June 2	0500	40°24.5'	70° 59'	--	39	31	--	52.5	52.5
June 2	0600	40° 24'	71° 11'	--	41	32	--	53.0	52.0
June 2	0700	40° 24'	71° 24'	--	43	34	--	54.0	--

Table 4.--Date, time, and position for temperature and salinity records in relation to 1-meter tows and Hardy Plankton Recorder gauze sections *Albatross III* cruise no. 50, May 25 to June 3, 1953--Continued

Date	Time	Latitude N.	Longitude W.	1-meter tow	Surface gauze section	10-meter gauze section	Surface		10-meter temperature
							Salinity	Temperature	
							‰	°F.	°F.
June 2	0800	40° 25'	71° 38'	--	44	35	--	54.4	54.2
June 2	0900	40° 25'	71° 50'	15	46	36	31.88	55.0	54.8
June 2	1100	40° 26'	72° 09'	--	52	41	--	55.3	54.2
June 2	1200	40° 26'	72° 21'	--	54	42	--	55.7	54.1
June 2	1300	40° 27'	72° 34'	--	55	44	--	56.2	54.7
June 2	1400	40° 27'	72°46.5'	--	57	45	--	56.0	54.3
June 2	1500	40° 31'	72° 58'	--	59	46	--	56.5	53.0
June 2	1600	40° 35'	72° 48'	--	61	48	--	56.2	53.0
June 2	1700	40° 38'	72° 36'	--	63	49	--	56.5	53.6
June 2	1800	40°41.5'	72° 24'	--	65	51	--	56.8	52.5
June 2	1900	40° 43'	72° 18'	16	69	55	--	56.0	54.8
June 2	2000	40°46.5'	72° 07'	--	70	56	--	55.5	53.3
June 2	2100	40°49.5'	71° 56'	--	72	57	30.10	55.0	53.2
June 2	2200	40°53.5'	71° 45'	--	74	59	--	54.0	52.4
June 2	2300	40°47.5'	71° 34'	--	76	60	--	54.9	54.5
June 2	2400	41° 00'	71° 22'	--	78	62	31.59	55.2	53.4
June 3	0100	40°59.5'	71° 10'	--	80	63	--	54.8	52.6
June 3	0200	40° 59'	70°57.5'	--	82	65	--	54.8	53.1
June 3	0305	41° 03'	70°54.5'	--	84	66	--	55.1	53.8
June 3	0400	41°12.5'	70°59.5'	17	86	68	--	55.0	54.2

Table 5.--Stages and sizes of fish eggs and larvae taken with 1-meter net on *Albatross III* cruise no. 46, March 19 to April 2, 1953

Tow			Species	Number of eggs	Modal stage	Number of larvae	Average diameter or length	Range
No.	Date	Time						
							mm.	*mm.*
1	Mar. 20	0400	-	-	-	-	-	-
2	Mar. 20	1650	H-C	7	V	-	1.56	1.52-1.58
			*H	-	-	13	4.74	4.49-4.96
			*C	-	-	2	4.59	4.21-4.96
3	Mar. 21	0520	H-C	10	V	-	1.53	1.43-1.61
			*H	-	-	2	4.32	3.74-4.90
			*C	-	-	9	4.82	4.08-5.64
4	Mar. 21	1730	-	-	-	-	-	-
5	Mar. 22	0745	-	-	-	-	-	-
6	Mar. 22	1210	H-C	3	IV	-	1.54	1.51-1.57
			A	10	II	-	2.44	2.31-2.68
			*C	-	-	1	3.94	-
			*A	-	-	19	5.59	4.59-6.12
			P	-	-	2	16.5	16-17
7	Mar. 22	2030	P	-	-	1	25	-
			HE	-	-	7	36.1	31-40
			W	-	-	4	21.5	20-23
			WO	-	-	1	58	-
8	Mar. 23	0900	H-C	16	V	-	1.58	1.50-1.63
			*H	-	-	2	4.70	4.49-4.91
			*C	-	-	4	4.57	4.15-4.96
9	Mar. 23	2140	H-C	6	V	-	1.54	1.50-1.63
			*H	-	-	3	4.52	4.52-4.73
			*A	-	-	2	5.27	5.10-5.44
10	Mar. 24	0630	-	-	-	-	-	-
11	Mar. 25	0500	H-C	9	V	-	1.58	1.43-1.70
			*H	-	-	4	4.46	4.13-4.77
			*C	-	-	1	4.37	-
			*A	-	-	1	5.92	-
			HE	-	-	1	41	-
			E	-	-	1	59	-

Table 5.--States and sizes of fish eggs and larvae taken with 1-meter net on *Albatross III* cruise no. 40, March 19 to April 2, 1953--Continued

Tow			Species	Number of eggs	Modal state	Number of larvae	Average diameter or length	Range
No.	Date	Time						
							mm.	*mm.*
12	Mar. 25	1815	*H	-	-	3	4.47	4.32-4.69
			*C	-	-	1	4.76	-
			P	-	-	2	24.0	21-27
			E	-	-	1	59	-
13	Mar. 27	0720	H-C	72	V	-	1.53	1.44-1.65
			A	3	II	-	2.44	2.33-2.61
			*H	-	-	11	4.38	3.57-5.20
			*C	-	-	22	4.94	4.28-5.71
			*A	-	-	2	5.62	5.30-5.95
14	Mar. 27	1815	H-C	3	VI	-	1.52	1.48-1.56
			A	1	VI	-	2.12	-
			*H	-	-	1	4.00	-
15	Mar. 28	0930	H-C	2	V	-	1.56	1.56
			*H	-	-	8	4.27	3.57-4.66
			SC	-	-	2	14	-
16	Mar. 29	1800	-	-	-	-	-	-
17	Mar. 30	0630	H-C	14	V	-	1.55	1.43-1.63
			A	3	V	-	2.55	2.45-2.62
			*H	-	-	3	4.00	3.47-4.91
18	Mar. 30	1900	E	-	-	8	58.0	55-62
			HE	-	-	2	39.0	37-41
19	Mar. 31	0800	P	-	-	1	25	-
20	Mar. 31	2130	H-C	74	V	-	1.54	1.44-1.80
			*H	-	-	48	4.47	3.88-4.79
			*C	-	-	10	4.90	4.35-5.44
			*A	-	-	2	5.89	5.85-5.92
21	Apr. 1	0950	H-C	89	V	-	1.54	1.38-1.67
			A	3	V	-	2.45	2.31-2.60
			Y	1	V	-	0.96	-
			*H	-	-	41	4.61	4.25-5.03
			*C	-	-	14	4.91	4.59-5.71
			*A	-	-	1	5.92	-
			*Y	-	-	1	2.96	-

Table 5.--Stages and sizes of fish eggs and larvae taken with 1-meter net on *Albatross III* cruise no. 46, March 19 to April 2, 1953--Continued

Tow			Species	Number of eggs	Modal state	Number of larvae	Average diameter or length	Range
No.	Date	Time						
							mm.	*mm.*
22	Apr. 1	1930	-	-	-	-	-	-
23	Apr. 2	0750	H-C	15	V	-	1.52	1.43-1.65
			*H	-	-	15	4.29	3.55-4.82
			*C	-	-	7	4.43	4.12-4.82

*Hatched aboard ship.

Table 6.--Stages and sizes of fish eggs and larvae taken with 1-meter net on *Albatross III* cruise no. 48, April 24 to May 8, 1953

Tow			Species	Number of eggs	Modal stage	Number of larvae	Average diameter or length	Range
No.	Date	Time						
							mm.	mm.
1	Apr. 25	0815	*A	-	-	2	5.06	4.98-5.14
2	Apr. 25	2045	WH	-	-	1	41	-
			HE	-	-	9	37.2	35-39
			E	-	-	4	57.3	52-61
			SC	-	-	2	14.5	14-15
			H	-	-	19	5.20	3.80-6.50
			C	-	-	5	7.8	6-12
			A	-	-	4	9.4	7-12
3	Apr. 26	0915	*RO	-	-	1	2.04	2.00-2.06
			P	-	-	1	19	-
4	Apr. 26	2350	H-C	6	II	-	1.54	1.46-1.62
			A	52	V	-	2.39	2.22-2.60
			*H	-	-	5	4.02	3.74-4.28
			*C	-	-	3	4.29	4.12-4.53
			*A	-	-	89	5.54	4.44-6.05
			*CU	-	-	1	4.03	-
			P	-	-	4	27.5	25-30
			WO	-	-	1	55	-
5	Apr. 27	1315	*H	-	-	1	3.74	-
			*C	-	-	2	4.09	4.00-4.18
			*A	-	-	11	5.63	5.41-5.92
			*RO	-	-	1	2.12	-
6	Apr. 28	0900	-	-	-	-	-	-
7	Apr. 28	2120	P	-	-	5	26.4	22-32
			HE	-	-	5	43.3	39-46
			WH	-	-	1	50	-
8	Apr. 29	1330	*RO	-	-	1	2.00	-
9	Apr. 29	2345	H-C	2	V	-	1.36	1.31-1.41
			RO	3	V	-	0.89	0.88-0.90
			*H	-	-	8	4.21	3.47-4.49
			*C	-	-	4	4.40	4.22-4.69
			*A	-	-	5	5.47	5.10-5.88
			*RO	-	-	5	2.13	2.01-2.18

Table 6.--Stages and sizes of fish eggs and larvae taken with 1-meter net on *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Tow			Species	Number of eggs	Modal stage	Number of larvae	Average diameter or length	Range
No.	Date	Time						
							mm.	*mm.*
			*Y	-	-	2	2.69	2.45-2.92
			AM	-	-	18	17.9	11-25
			SY	-	-	1	32	-
			SC	-	-	1	10	-
10	Apr. 30	1300	RO	29	V	-	0.89	0.86-0.92
			*RO	-	-	29	2.15	1.97-2.31
			*Y	-	-	1	2.24	-
11	May 1	0100	H-C	1	V	-	1.52	-
			*CU	-	-	6	3.69	3.20-4.28
			*RO	-	-	3	2.05	2.03-2.06
			P	-	-	1	26	-
			WH	-	-	7	36.4	13-45
			BU	-	-	1	27	-
12	May 1	2130	H	2	VI	-	1.56	1.52-1.59
			*H	-	-	3	4.11	3.96-4.31
			*RO	-	-	1	2.09	-
			*Y	-	-	3	2.83	2.54-3.20
			AM	-	-	11	54.9	44-61
13	May 2	1100	H-C	12	V	-	1.44	1.27-1.55
			Y	14	V	-	0.94	0.86-1.01
			*H	-	-	9	3.80	3.40-4.15
			*A	-	-	4	5.06	4.12-5.48
			*Y	-	-	25	2.72	2.06-3.33
			H	-	-	8	6.90	6.04-8.10
			C	-	-	21	6.92	6.04-7.52
14	May 3	0030	CU	5	VI	-	1.39	1.37-1.43
			*CU	-	-	15	4.29	4.08-4.66
			P	-	-	1	18	-
			HE	-	-	20	45.3	41-51
15	May 3	1405	H	1	VI	-	1.46	-
16	May 4	0820	*H	-	-	5	4.01	3.84-4.31
			*RO	-	-	11	1.95	1.68-2.12
			*Y	-	-	8	2.80	2.00-2.92
			*A	-	-	4	5.24	4.95-5.56

Table 6.--Stages and sizes of fish eggs and larvae taken with 1-meter net on *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Tow			Species	Number of eggs	Modal stage	Number of larvae	Average diameter or length	Range
No.	Date	Time						
							mm.	*mm.*
17	May 5	0600	H-C	92	V	-	1.51	1.42-1.65
			CU	4	V	-	1.36	1.30-1.42
			A	1	V	-	2.70	-
			*H	-	-	44	4.23	3.81-4.79
			*C	-	-	5	3.97	3.74-4.49
			*CU	-	-	6	3.96	3.26-4.79
			*A	-	-	1	5.78	-
18	May 5	1900	H-C	4	V	-	1.57	1.46-1.62
			CU	23	V	-	1.37	1.27-1.46
			RO	1	I	-	0.86	-
			*H	-	-	10	4.05	3.87-4.56
			*CU	-	-	18	3.99	3.65-4.34
19	May 6	0820	CU	2	VI	-	1.51	1.48-1.54
			RO	56	V	-	0.89	0.83-0.97
			*CU	-	-	1	4.59	-
			*RO	-	-	27	2.16	2.01-2.38
20	May 6	1800	H-C	3	VI	-	1.47	1.44-1.50
			CU	1	V	-	1.47	-
			RO	23	V	-	0.88	0.84-0.90
			*RO	-	-	14	2.13	1.94-2.38
			P	-	-	9	21.9	21-23
			C	-	-	1	32	-
21	May 7	0815	CU	84	V	-	1.37	1.22-1.50
			*CU	-	-	16	4.32	4.01-4.59
			P	-	-	2	16.5	16-17
			C	-	-	1	8	-
22	May 7	2030	H	-	-	3	4.87	4.08-6.04
			C	-	-	1	6.08	-
			RH	-	-	1	3.02	-
			Y		-	8	4.81	3.88-5.78

*Hatched aboard ship.

Table 7.--Stages and sizes of fish eggs and larvae taken with 1-meter net on *Albatross III* cruise no. 50, May 25 to June 3, 1953

Tow			Species	Number of eggs	Modal stage	Number of larvae	Average diameter or length	Range
No.	Date	Time						
							mm.	*mm.*
1	May 26	0430	A	-	-	29	8.4	6.50-13
			WH	-	-	2	18.0	13-23
2	May 26	1715	-	-	-	-	-	-
3	May 27	0845	H-C	3	V	-	1.49	1.46-1.52
			CU	12	V	-	1.40	1.36-1.50
			RO	1	V	-	0.95	-
			Y	4	V	-	0.88	0.86-0.92
			*H	-	-	4	4.16	3.87-4.69
			*CU	-	-	14	4.08	3.90-4.50
			*RO	-	-	4	2.16	2.00-2.35
			*Y	-	-	11	2.91	2.41-3.36
4	May 27	2030	C	-	-	2	24.5	24-25
5	May 28	1045	M	2	III	-	1.16	1.16-1.17
			*M	-	-	2	3.57	3.33-3.81
			*RO	-	-	3	2.15	2.04-2.24
6	May 28	2215	M	4	V	-	1.21	1.14-1.24
			WF	1	-	-	1.36	-
			*M	-	-	5	3.45	3.30-3.80
			*WF	-	-	2	4.72	4.18-5.26
			*RO	-	-	3	2.10	2.06-2.12
			RH	-	-	1	6.40	-
			Y	-	-	1	13	-
			AM	-	-	45	24.9	10-40
7	May 29	1230	H-C	3	VI	-	1.38	1.36-1.41
			CU	4	VI	-	1.46	1.41-1.48
			Y	3	III	-	0.88	0.87-0.91
			RO	22	V	-	0.89	0.83-0.92
			*H	-	-	1	4.11	-
			*CU	-	-	2	4.65	4.05-4.08
			*Y	-	-	4	3.23	3.09-3.33
			*WF	-	-	2	5.44	5.37-5.51
8	May 30	0045	AL	-	-	1	22	-

Table 7.--Stages and sizes of fish eggs and larvae taken with 1-meter net on *Albatross III* cruise no. 50, May 25 to June 3, 1953--Continued

Tow			Species	Number of eggs	Modal stage	Number of larvae	Average diameter or length	Range
No.	Date	Time						
							mm.	*mm.*
9	May 30	1420	H-C	23	V	-	1.44	1.33-1.59
			CU	1	V	-	1.36	-
			RO	3	V	-	0.86	0.83-0.89
			Y	106	V	-	0.89	0.83-0.98
			*H	-	-	21	3.83	3.52-4.31
			*CU	-	-	2	3.85	3.55-4.15
			*Y	-	-	130	2.60	2.25-3.01
10	May 31	0245	*RO	-	-	4	0.93	0.80-0.98
			R	-	-	6	6.10	5.40-6.52
			AM	-	-	1	35	-
11	May 31	1845	C	-	-	1	22	-
12	June 1	0845	SH	6	V	-	1.00	0.95-1.05
			*SH	-	-	42	3.01	2.73-3.30
13	June 1	2100	H	-	-	150	21.5	9-29
			WH	-	-	2	29	21-37
14	June 2	0945	SH	30	V	-	0.97	0.89-1.11
			RH	7	V	-	0.76	0.74-0.78
			RO	6	V	-	0.82	0.80-0.84
			M	6	V	-	1.20	1.16-1.29
			U	7	V	-	1.02	1.01-1.03
			*SH	-	-	22	2.99	2.65-3.47
			*RH	-	-	2	2.03	1.90-2.17
			*RO	-	-	2	2.01	-
			*M	-	-	6	3.72	3.23-4.28
			*U	-	-	4	2.27	2.11-2.38
			RO	-	-	13	5.54	3.75-8.23
			RH	-	-	1	11	-
			SY	-	-	1	8	-
15	June 2	1845	CN	60	V	-	0.91	0.82-1.01
			M	17	V	-	1.15	1.01-1.20
			WE	4	V	-	0.87	0.82-0.95
			U	4	V	-	0.74	0.70-0.76
			*CN	-	-	98	2.75	2.41-3.14
			*M	-	-	6	3.27	3.07-3.52

Table 7.--Stages and sizes of fish eggs and larvae taken with 1-meter net on *Albatross III* cruise no. 50, May 25 to June 3, 1953--Continued

Tow			Species	Number of eggs	Modal stage	Number of larvae	Average diameter or length	Range
No.	Date	Time						
							mm.	*mm.*
			*WE	-	-	3	2.71	2.53-2.92
			*U	-	-	1	1.97	-
			RO	-	-	54	6.08	2.80-13.62
			SY	-	-	1	6.04	-
16	June 3	0445	CN	84	V	-	0.90	0.84-0.97
			M	18	V	-	1.12	0.95-1.29
			MH	1	V	-	1.75	-
			U	14	V	-	0.83	0.76-0.88
			*CN	-	-	65	2.60	2.12-2.97
			*M	-	-	10	2.73	2.14-3.07
			*U	-	-	15	2.00	1.84-2.11
			SH	-	-	1	3.51	-
			SY	-	-	24	15.1	11-20

*Hatched aboard ship.

Table 8.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 46, March 19 to April 2, 1953

Surface

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	mm.
1	1-6	-	-	-	-	-	-	-	-	-	-	-
	7	-	-	-	-	-	-	-	HE	1	37	-
	8	-	-	-	-	-	-	-	HE	1	50	-
	9-21	-	-	-	-	-	-	-	-	-	-	-
	23-43	-	-	-	-	-	-	-	-	-	-	-
	46-64	-	-	-	-	-	-	-	-	-	-	-
	66-87	-	-	-	-	-	-	-	-	-	-	-
2	1-16	-	-	-	-	-	-	-	-	-	-	-
	17	C	-	1	-	-	-	-	-	-	-	-
		A	-	1	-	-	-	-	-	-	-	-
	18	A	-	1	-	-	-	-	-	-	-	-
	19-20	-	-	-	-	-	-	-	-	-	-	-
	22-23	-	-	-	-	-	-	-	-	-	-	-
	24	RO	-	-	-	-	1	-	-	-	-	-
	25-26	-	-	-	-	-	-	-	-	-	-	-
	27	C	1	-	-	-	-	-	-	-	-	-
	28	C	1	-	-	-	-	-	-	-	-	-
	29-42	-	-	-	-	-	-	-	-	-	-	-
	44-58	-	-	-	-	-	-	-	-	-	-	-
	59	C	-	-	-	-	1	-	-	-	-	-
	60-64	-	-	-	-	-	-	-	-	-	-	-
	66-77	-	-	-	-	-	-	-	-	-	-	-
	78	H	-	1	1	1	-	-	-	-	-	-
	79-81	-	-	-	-	-	-	-	-	-	-	-
	82	H	-	2	-	-	-	-	-	-	-	-
	83	H	-	2	-	-	-	-	-	-	-	-
	84-85	-	-	-	-	-	-	-	-	-	-	-
	85-97	-	-	-	-	-	-	-	-	-	-	-
	98	-	-	-	-	-	-	-	P	1	18	-
	99-100	-	-	-	-	-	-	-	-	-	-	-
3	1-20	-	-	-	-	-	-	-	-	-	-	-
	22-23	-	-	-	-	-	-	-	-	-	-	-
	24	H	-	-	-	-	1	-	-	-	-	-
	25	H	-	-	-	-	1	-	-	-	-	-
	26	H	-	-	-	-	1	-	-	-	-	-
	27-36	-	-	-	-	-	-	-	-	-	-	-
	37	H	-	-	-	-	1	-	-	-	-	-

Table 8.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 46, March 19 to April 2, 1953--Continued

Surface--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
3--	38-41	-	-	-	-	-	-	-	-	-	-	-
Cont.	47	C	-	-	-	-	1	-	-	-	-	-
	48	H	-	-	-	-	-	1	-	-	-	-
		C	-	-	-	-	1	-	-	-	-	-
	49	H	-	-	-	-	2	-	-	-	-	-
		C	-	-	1	2	-	-	-	-	-	-
	50	H	-	-	-	-	1	-	-	-	-	-
	51	H	-	-	1	-	-	-	-	-	-	-
		C	-	-	1	-	-	-	-	-	-	-
	52	H	-	-	2	1	-	-	-	-	-	-
	53	H	-	-	3	-	1	-	-	-	-	-
	54	H	-	-	-	-	1	-	-	-	-	-
	55	H	-	-	-	1	-	-	-	-	-	-
	56	H	-	-	-	-	2	-	-	-	-	-
	57	H	-	-	-	-	1	-	-	-	-	-
	58	-	-	-	-	-	-	-	-	-	-	-
	60	H	-	-	-	1	-	-	-	-	-	-
	61	-	-	-	-	-	-	-	-	-	-	-
	62	H	-	-	-	-	1	-	-	-	-	-
	63	H	-	-	-	-	2	-	-	-	-	-
	64-68	-	-	-	-	-	-	-	-	-	-	-
	69	H	-	-	-	-	1	-	-	-	-	-
	70	A	-	-	-	-	1	-	-	-	-	-
	71-73	-	-	-	-	-	-	-	-	-	-	-
	74	H	-	-	-	-	1	-	-	-	-	-
	75-80	-	-	-	-	-	-	-	-	-	-	-
	81	H	-	-	-	-	1	-	-	-	-	-
	82-83	-	-	-	-	-	-	-	-	-	-	-
	84	H	-	-	-	-	3	-	-	-	-	-
	85	-	-	-	-	-	-	-	-	-	-	-
4	1-5	-	-	-	-	-	-	-	-	-	-	-
	11-38	-	-	-	-	-	-	-	-	-	-	-
	40-44	-	-	-	-	-	-	-	-	-	-	-
	45	H	-	-	-	1	-	-	-	-	-	-
	46	-	-	-	-	-	-	-	-	-	-	-
	47	H	-	-	-	-	1	-	-	-	-	-
	48	H	-	-	1	1	-	-	-	-	-	-
	49	H	-	-	-	-	2	-	-	-	-	-

Table 8.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 46, March 19 to April 2, 1953--Continued

Surface--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	mm.
4--Cont.	49	C	-	-	-	-	1	-	-	-	-	-
	50	H	-	-	-	1	2	-	-	-	-	-
	51	H	-	-	-	-	3	-	-	-	-	-
	52	H	-	-	2	-	1	1	-	-	-	-
	53	H	-	-	-	2	1	-	-	-	-	-
	54	H	-	-	-	-	4	-	-	-	-	-
	55	H	-	-	-	1	1	-	-	-	-	-
	56	H	-	-	-	-	3	-	-	-	-	-
	57	-	-	-	-	-	-	-	-	-	-	-
	58	H	-	-	1	-	3	-	-	-	-	-
	59	H	-	-	1	-	-	-	-	-	-	-
	60	H	-	-	-	-	1	-	-	-	-	-
	61	H	-	-	1	-	-	-	-	-	-	-
	62-64	-	-	-	-	-	-	-	-	-	-	-
	66	H	-	-	-	-	3	-	-	-	-	-
	67-93	-	-	-	-	-	-	-	-	-	-	-
5	2-17	-	-	-	-	-	-	-	-	-	-	-
	18	H	-	-	-	-	1	-	-	-	-	-
	19	-	-	-	-	-	-	-	-	-	-	-
	20	H	-	-	-	-	1	-	-	-	-	-
	21	-	-	-	-	-	-	-	-	-	-	-
	22	H	-	-	-	1	-	-	-	-	-	-
	23	H	-	-	-	-	1	-	-	-	-	-
	24-29	-	-	-	-	-	-	-	-	-	-	-
	29-37	-	-	-	-	-	-	-	-	-	-	-
	38	-	-	-	-	-	-	-	W	1	25	-
	39-49	-	-	-	-	-	-	-	-	-	-	-
	50	H	-	-	-	2	-	-	-	-	-	-
	51	H	-	-	5	-	-	-	HE	1	44	-
	52	H	-	-	1	-	-	-	-	-	-	-
	53	H	-	-	3	-	-	-	HE	2	40	30-50
	56	H	-	-	-	-	3	-	-	-	-	-
		C	-	-	-	-	1	-	-	-	-	-
	57	H	-	-	-	-	4	-	HE	1	49	-
		C	-	-	-	-	1	-	-	-	-	-
	58	H	-	-	2	-	-	-	-	-	-	-
	59	H	-	-	2	-	-	1	-	-	-	-
	60	H	-	-	2	1	-	-	-	-	-	-

Table 8.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 46, March 19 to April 2, 1953--Continued

Surface--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
5--	61	H	-	-	1	1	1	1	-	-	-	-
Cont.	62	H	-	-	2	1	4	1	-	-	-	-
	63	H	-	1	1	1	1	-	-	-	-	-
	64	H	-	2	2	-	4	-	-	-	-	-
	65	H	-	-	-	1	-	-	-	-	-	-
	66	-	-	-	-	-	-	-	-	-	-	-
	67	H	-	-	-	1	2	-	-	-	-	-
	68	H	-	-	1	-	-	-	-	-	-	-
	69-72	-	-	-	-	-	-	-	-	-	-	-
	73	-	-	-	-	-	-	-	HE	1	-	-
	74-75	-	-	-	-	-	-	-	-	-	-	-
	76	H	-	-	-	-	1	-	-	-	-	-
	77	H	-	-	-	-	6	-	-	-	-	-
	78	H	-	-	-	-	1	-	-	-	-	-
	79	H	-	-	-	-	1	-	-	-	-	-
	80	H	-	-	-	-	-	6	-	-	-	-
		C	-	-	-	1	2	-	-	-	-	-
	81	H	-	-	-	-	2	-	-	-	-	-
		C	-	-	-	-	-	1	-	-	-	-
	82-83	-	-	-	-	-	-	-	-	-	-	-
	84	-	-	-	-	-	-	-	C	2	4.82	-
	85	H	-	-	-	-	1	-	C	1	4.61	-
	86	H	-	-	-	-	1	1	-	-	-	-
	87	A	-	-	-	-	-	1	-	-	-	-
	88	A	-	-	-	-	-	1	-	-	-	-
	89-90	-	-	-	-	-	-	-	-	-	-	-
	91	H	-	-	-	-	1	-	-	-	-	-
	98	-	-	-	-	-	-	-	HE	1	-	-
	99	-	-	-	-	-	-	-	HE	1	45	-
6	57	-	-	-	-	-	-	-	-	-	-	-
	58	-	-	-	-	-	-	-	C	1	4.76	-
	59-66	-	-	-	-	-	-	-	-	-	-	-
	67	H	-	-	-	-	1	-	-	-	-	-
	68-75	-	-	-	-	-	-	-	-	-	-	-
	76	H	-	-	-	-	1	-	-	-	-	-

Table 8.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 46, March 19 to April 2, 1953--Continued

10 Meters

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
1	1-74	-	-	-	-	-	-	-	-	-	-	-
2	1-86	-	-	-	-	-	-	-	-	-	-	-
3	1-16	-	-	-	-	-	-	-	-	-	-	-
	18-34	-	-	-	-	-	-	-	-	-	-	-
	40	C	-	-	-	-	2	-	-	-	-	-
	41	H	-	-	-	-	2	-	-	-	-	-
		C	-	-	-	-	4	-	-	-	-	-
	42-43	-	-	-	-	-	-	-	-	-	-	-
	44	H	-	-	-	-	1	-	-	-	-	-
	45-46	-	-	-	-	-	-	-	-	-	-	-
	47	H	-	-	-	-	2	-	-	-	-	-
	49-50	-	-	-	-	-	-	-	-	-	-	-
	51	H	-	-	-	-	1	-	-	-	-	-
	52-55	-	-	-	-	-	-	-	-	-	-	-
	56	H	-	-	-	-	1	-	-	-	-	-
	57-58	-	-	-	-	-	-	-	-	-	-	-
	59	H	-	-	-	-	1	-	C	1	4.52	-
	60-67	-	-	-	-	-	-	-	-	-	-	-
	68	H	-	1	-	-	-	-	-	-	-	-
	69	H	-	-	-	-	1	1	-	-	-	-
4	1	-	-	-	-	-	-	-	HE	1	33	-
	2	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	HE	1	33	-
	4	-	-	-	-	-	-	-	-	-	-	-
	10-11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	HE	1	36	-
	13	-	-	-	-	-	-	-	HE	1	36	-
	14	-	-	-	-	-	-	-	R	1	6.04	-
	15	-	-	-	-	-	-	-	-	-	-	-
	16	H	-	-	-	-	1	-	R	2	5.00	-
	17	-	-	-	-	-	-	-	R	1	-	-
	18-21	-	-	-	-	-	-	-	-	-	-	-
	22	-	-	-	-	-	-	-	C	1	4.09	-
	23-27	-	-	-	-	-	-	-	-	-	-	-
	32-34	-	-	-	-	-	-	-	-	-	-	-
	35	-	-	-	-	-	-	-	R	1	6.51	-

Table 8.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 46, March 19 to April 2, 1953--Continued

10 Meters--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
4--	36-42	-	-	-	-	-	-	-	-	-	-	-
Cont.	43	H	-	-	-	-	1	-	-	-	-	-
	44-49	-	-	-	-	-	-	-	-	-	-	-
	51-70	-	-	-	-	-	-	-	-	-	-	-
	72-90	-	-	-	-	-	-	-	-	-	-	-
	1-18	-	-	-	-	-	-	-	-	-	-	-
	20-22	-	-	-	-	-	-	-	-	-	-	-
	23	H	-	-	-	-	2	-	-	-	-	-
	24	H	-	-	-	-	1	-	-	-	-	-
	25	H	-	-	1	-	4	-	-	-	-	-
	26	-	-	-	-	-	-	-	-	-	-	-
	27	H	-	-	-	-	1	-	-	-	-	-
	28-34	-	-	-	-	-	-	-	-	-	-	-
	35	H	-	-	-	-	2	-	-	-	-	-
	36	H	-	-	-	-	2	-	-	-	-	-
	37	H	-	-	2	-	17	1	-	-	-	-
	38	H	-	-	-	-	2	-	-	-	-	-
	40-43	-	-	-	-	-	-	-	-	-	-	-
	44	-	-	-	-	-	-	-	C	2	4.81	4.57-5.05
	45	-	-	-	-	-	-	-	C	1	-	-
	46	-	-	-	-	-	-	-	C	1	-	-
		-	-	-	-	-	-	-	H	1	4.71	-
	47-50	-	-	-	-	-	-	-	-	-	-	-
	51	-	-	-	-	-	-	-	P	1	-	-
	52-53	-	-	-	-	-	-	-	-	-	-	-

Table 9.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 48, April 24 to May 8, 1953

Surface

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
1		-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	C	1	6.04	-
	3	-	-	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	RO	1	2.75	-
	5-16	-	-	-	-	-	-	-	-	-	-	-
	17	RO	-	-	-	-	1	-	-	-	-	-
	18-28	-	-	-	-	-	-	-	-	-	-	-
	30-43	-	-	-	-	-	-	-	-	-	-	-
	44	-	-	-	-	-	-	-	C	1	12	-
	45	-	-	-	-	-	-	-	C	1	13	-
	46-48	-	-	-	-	-	-	-	-	-	-	-
	49	-	-	-	-	-	-	-	C	1	13	-
	50	-	-	-	-	-	-	-	-	-	-	-
	53	-	-	-	-	-	-	-	-	-	-	-
	54	-	-	-	-	-	-	-	C	1	13	-
	55	-	-	-	-	-	-	-	C	1	11	-
	56-58	-	-	-	-	-	-	-	-	-	-	-
	59	H	-	-	-	-	1	-	H	1	6.51	-
	60	-	-	-	-	-	-	-	-	-	-	-
	61	-	-	-	-	-	-	-	HE	1	40	-
	62	-	-	-	-	-	-	-	HE	2	43	-
	63-73	-	-	-	-	-	-	-	-	-	-	-
	75-93	-	-	-	-	-	-	-	-	-	-	-
	94	RO	-	1	-	-	-	-	-	-	-	-
	95-97	-	-	-	-	-	-	-	-	-	-	-
2	1-16	-	-	-	-	-	-	-	-	-	-	-
	17	A	-	-	-	-	1	-	-	-	-	-
	18-21	-	-	-	-	-	-	-	-	-	-	-
	23-42	-	-	-	-	-	-	-	-	-	-	-
	43	H	-	-	-	-	1	-	-	-	-	-
	44	H	-	-	-	-	3	-	-	-	-	-
	45	H	-	-	1	-	5	-	-	-	-	-
	46	H	-	-	1	-	-	-	-	-	-	-
	47	H	-	-	1	-	1	-	-	-	-	-
	48	H	-	-	-	-	2	-	-	-	-	-
	49	H	-	-	1	-	1	-	-	-	-	-
	50-55	-	-	-	-	-	-	-	-	-	-	-
	56	-	-	-	-	-	-	-	-	-	-	-

Table 9.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Surface--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
2--	57	H	-	-	-	-	3	-	-	-	-	-
Cont.	58	H	-	-	-	-	1	-	-	-	-	-
	59	H	-	-	-	-	1	-	-	-	-	-
	60	-	-	-	-	-	-	-	-	-	-	-
	61	H	-	-	-	-	1	-	-	-	-	-
	62-64	-	-	-	-	-	-	-	-	-	-	-
	65	H	-	-	-	-	3	-	-	-	-	-
	66-67	-	-	-	-	-	-	-	-	-	-	-
	68	H	-	-	-	-	1	-	-	-	-	-
	69	H	-	-	1	-	-	-	-	-	-	-
	70	-	-	-	-	-	-	-	-	-	-	-
	71	H	-	-	-	-	1	-	-	-	-	-
	72	-	-	-	-	-	-	-	-	-	-	-
	74-93	-	-	-	-	-	-	-	-	-	-	-
3	1-2	-	-	-	-	-	-	-	-	-	-	-
	3	RO	-	-	-	-	1	-	-	-	-	-
	4-11	-	-	-	-	-	-	-	-	-	-	-
	12	H	-	-	-	1	-	-	-	-	-	-
	13-15	-	-	-	-	-	-	-	-	-	-	-
	17-28	-	-	-	-	-	-	-	-	-	-	-
	29	RO	-	-	-	-	1	-	-	-	-	-
	30-35	-	-	-	-	-	-	-	-	-	-	-
	36	-	-	-	-	-	-	-	P	1	20	-
	37	-	-	-	-	-	-	-	-	-	-	-
	39	-	-	-	-	-	-	-	-	-	-	-
	40	RO	-	-	-	-	1	-	-	-	-	-
	41-43	-	-	-	-	-	-	-	-	-	-	-
	44	H	-	-	-	-	1	-	-	-	-	-
	45-51	-	-	-	-	-	-	-	-	-	-	-
	52	Y	-	-	-	-	1	-	-	-	-	-
	53-59	-	-	-	-	-	-	-	-	-	-	-
	62	H	-	-	-	-	1	-	-	-	-	-
	63-72	-	-	-	-	-	-	-	-	-	-	-
	73	-	-	-	-	-	-	-	C	1	6.08	-
	74-89	-	-	-	-	-	-	-	-	-	-	-
	90	H	-	-	-	-	1	-	-	-	-	-
	91-94	-	-	-	-	-	-	-	-	-	-	-

Table 9.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Surface--Continued

Loading number	Gauze Section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	mm.
4	1-16	-	-	-	-	-	-	-	-	-	-	-
	17	Y	-	-	-	-	1	-	-	-	-	-
	18	-	-	-	-	-	-	-	-	-	-	-
	20	-	-	-	-	-	-	-	-	-	-	-
	21	Y	-	-	-	-	-	1	-	-	-	-
	22-40	-	-	-	-	-	-	-	-	-	-	-
	42-43	-	-	-	-	-	-	-	-	-	-	-
	44	H	-	-	-	-	1	-	-	-	-	-
	45	-	-	-	-	-	-	-	-	-	-	-
	46	H	-	-	-	-	1	1	-	-	-	-
	47-48	-	-	-	-	-	-	-	-	-	-	-
	49	H	-	-	-	-	1	-	-	-	-	-
	50	H	-	-	1	-	5	-	-	-	-	-
	51	-	-	-	-	-	-	-	-	-	-	-
	52	H	-	-	-	-	1	-	-	-	-	-
	53	-	-	-	-	-	-	-	-	-	-	-
	54	H	-	-	-	-	1	-	-	-	-	-
	55	H	-	-	-	-	1	-	-	-	-	-
	56-60	-	-	-	-	-	-	-	-	-	-	-
	61	H	-	-	-	-	1	-	-	-	-	-
	63-91	-	-	-	-	-	-	-	-	-	-	-
	92	-	-	-	-	-	-	-	U	1	24	-
	93-95	-	-	-	-	-	-	-	-	-	-	-
5	1-16	-	-	-	-	-	-	-	-	-	-	-
	17	-	-	-	-	-	-	-	AM	1	-	-
	18-23	-	-	-	-	-	-	-	-	-	-	-
	24	-	-	-	-	-	-	-	AM	1	-	-
	25-34	-	-	-	-	-	-	-	-	-	-	-
	35	H	-	-	1	-	2	-	-	-	-	-
	36	H	-	-	-	-	1	-	-	-	-	-
	38	H	-	-	-	-	5	-	-	-	-	-
	39	-	-	-	-	-	-	-	-	-	-	-
	40	H	-	-	-	1	1	-	-	-	-	-
	41-42	-	-	-	-	-	-	-	-	-	-	-
	43	H	-	-	-	-	1	-	-	-	-	-
	44	H	-	-	-	1	1	-	-	-	-	-
	45	H	-	-	-	-	3	-	-	-	-	-
	46	-	-	-	-	-	-	-	-	-	-	-

Table 9.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Surface--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
4--	47	H	-	-	-	-	1	-	-	-	-	-
Cont.	48-49	-	-	-	-	-	-	-	-	-	-	-
	50	H	-	-	-	-	1	-	-	-	-	-
	51	-	-	-	-	-	-	-	-	-	-	-
	52	H	-	-	-	-	1	-	-	-	-	-
	53-59	-	-	-	-	-	-	-	-	-	-	-
	61	H	-	-	-	-	1	-	-	-	-	-
	62-63	-	-	-	-	-	-	-	-	-	-	-
	64	H	-	-	-	-	1	-	-	-	-	-
	65-67	-	-	-	-	-	-	-	-	-	-	-
	68	H	-	-	-	-	1	-	-	-	-	-
	69-81	-	-	-	-	-	-	-	-	-	-	-
	83-89	-	-	-	-	-	-	-	-	-	-	-
	90	-	-	-	-	-	-	-	AM	1	23	-
	91-92	-	-	-	-	-	-	-	-	-	-	-
	93	-	-	-	-	-	-	-	AM	1	31	-
	94-98	-	-	-	-	-	-	-	-	-	-	-
	99	H	-	-	-	-	1	-	-	-	-	-
		CU	-	-	-	-	1	-	-	-	-	-
6	1-3	-	-	-	-	-	-	-	-	-	-	-
	4	Y	-	-	-	-	1	-	-	-	-	-
	5-13	-	-	-	-	-	-	-	-	-	-	-
	14	-	-	-	-	-	-	-	Y	1	6.04	-
	15-19	-	-	-	-	-	-	-	-	-	-	-
	20	H	-	-	-	-	1	-	-	-	-	-
	21	-	-	-	-	-	-	-	-	-	-	-
	22	CU	-	-	-	-	1	-	-	-	-	-
	23	CU	-	-	-	-	1	-	-	-	-	-
	25	CU	-	-	-	-	1	-	-	-	-	-
	26-36	-	-	-	-	-	-	-	-	-	-	-
	37	-	-	-	-	-	-	-	H	1	9	-
	38-41	-	-	-	-	-	-	-	-	-	-	-
	42	-	-	-	-	-	-	-	Y	1	8	-
	43	-	-	-	-	-	-	-	Y	1	8	-
	44-45	-	-	-	-	-	-	-	-	-	-	-
	47	-	-	-	-	-	-	-	Y	1	8	-
	48	-	-	-	-	-	-	-	Y	1	8	-
	49	-	-	-	-	-	-	-	Y	1	13	-

Table 9.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Surface--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
6--Cont.	50	CU	-	-	-	-	1	-	-	-	-	-
	51	-	-	-	-	-	-	-	-	-	-	-
	52	-	-	-	-	-	-	-	H	2	8.5	8-9
	53	-	-	-	-	-	-	-	C	1	13	-
	54-55	-	-	-	-	-	-	-	-	-	-	-
	56	-	-	-	-	-	-	-	C	1	15	-
	57-59	-	-	-	-	-	-	-	-	-	-	-
	60	CU	-	-	-	-	1	-	-	-	-	-
	61-71	-	-	-	-	-	-	-	-	-	-	-
						10 Meters						
1	1-24	-	-	-	-	-	-	-	-	-	-	-
	26-38	-	-	-	-	-	-	-	-	-	-	-
	39	-	-	-	-	-	-	-	C	2	6.51	-
		-	-	-	-	-	-	-	H	3	6.51	-
	40	-	-	-	-	-	-	-	H	1	6.47	-
	41	-	-	-	-	-	-	-	H	1	6.04	-
	42-43	-	-	-	-	-	-	-	-	-	-	-
	44	C	-	-	-	-	-	1	H	1	4.51	-
	47-64	-	-	-	-	-	-	-	-	-	-	-
	67-86	-	-	-	-	-	-	-	-	-	-	-
	87	H	-	-	-	-	1	-	-	-	-	-
2	1-18	-	-	-	-	-	-	-	-	-	-	-
	24-48	-	-	-	-	-	-	-	-	-	-	-
	49	H	-	-	-	-	2	-	-	-	-	-
	50	H	-	-	-	-	2	-	-	-	-	-
	51	H	-	-	-	-	3	-	-	-	-	-
	55-68	-	-	-	-	-	-	-	-	-	-	-
	70-85	-	-	-	-	-	-	-	-	-	-	-
3	1-13	-	-	-	-	-	-	-	-	-	-	-
	14	-	-	-	-	-	-	-	AR	1	15	-
	17	-	-	-	-	-	-	-	-	-	-	-
	18	-	-	-	-	-	-	-	Y	1	-	-
	19-35	-	-	-	-	-	-	-	-	-	-	-

Table 9.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Surface--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
3--	38-54	-	-	-	-	-	-	-	-	-	-	-
Cont.	55	CU	-	-	-	-	1	-	-	-	-	-
	56	-	-	-	-	-	-	-	-	-	-	-
	59-68	-	-	-	-	-	-	-	-	-	-	-
	69	-	-	-	-	-	-	-	H	1	6.55	-
	70-85	-	-	-	-	-	-	-	-	-	-	-
	86	H	-	-	1	-	-	-	-	-	-	-
4	1-11	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	H	1	6.10	-
	13	-	-	-	-	-	-	-	H	1	6.08	-
	14	-	-	-	-	-	-	-	-	-	-	-
	15	-	-	-	-	-	-	-	H	1	-	-
	16	-	-	-	-	-	-	-	H	3	6.55	-
	17	-	-	-	-	-	-	-	H	2	6.14	-
	20-27	-	-	-	-	-	-	-	-	-	-	-
	28	-	-	-	-	-	-	-	H	1	6.00	-
	29-36	-	-	-	-	-	-	-	-	-	-	-
	37	H	-	-	1	1	-	-	-	-	-	-
	40	H	-	-	2	-	-	-	-	-	-	-
	41-42	-	-	-	-	-	-	-	-	-	-	-
	43	-	-	-	-	-	-	-	H	1	6.00	-
	44	-	-	-	-	-	-	-	-	-	-	-
	45	H	-	-	-	-	1	-	-	-	-	-
	46	-	-	-	-	-	-	-	-	-	-	-
	47	H	-	-	-	-	1	-	-	-	-	-
	48	-	-	-	-	-	-	-	-	-	-	-
	49	H	-	-	-	-	1	-	-	-	-	-
	50-52	-	-	-	-	-	-	-	-	-	-	-
	53	-	-	-	-	-	-	-	U	2	6.14	-
	54-57	-	-	-	-	-	-	-	-	-	-	-
	58	H	-	1	1	-	2	-	-	-	-	-
	60-87	-	-	-	-	-	-	-	-	-	-	-
5	1-29	-	-	-	-	-	-	-	-	-	-	-
	30	H	-	-	-	-	3	-	-	-	-	-
	31	-	-	-	-	-	-	-	-	-	-	-
	35	H	-	-	-	-	1	-	-	-	-	-

Table 9.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Surface--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
4--Cont.	36-40	-	-	-	-	-	-	-	-	-	--	-
	41	H	-	-	1	-	-	-	-	-	--	-
	42-45	-	-	-	-	-	-	-	-	-	--	-
	46	H	-	-	1	-	-	-	-	-	--	-
	47-52	-	-	-	-	-	-	-	-	-	--	-
	55	-	-	-	-	-	-	-	-	-	--	-
	56	H	-	-	1	-	-	-	-	-	--	-
	57-73	-	-	-	-	-	-	-	-	-	--	-
	76-89	-	-	-	-	-	-	-	-	-	--	-
6	1-4	-	-	-	-	-	-	-	-	-	--	-
	5	-	-	-	-	-	-	-	U	1	32	-
	6-15	-	-	-	-	-	-	-	-	-	-	-
	16	-	-	-	-	-	-	-	C	1	11	-
	17	-	-	-	-	-	-	-	-	-	-	-
	18	-	-	-	-	-	-	-	H	1	13	-
	19	-	-	-	-	-	-	-	-	-	-	-
	20	H	-	-	-	-	1	1	-	-	-	-
		CU	-	-	-	-	2	-	-	-	-	-
	24-28	-	-	-	-	-	-	-	-	-	-	-
	29	-	-	-	-	-	-	-	R	1	6.00	-
	30-35	-	-	-	-	-	-	-	-	-	-	-
	36	-	-	-	-	-	-	-	H	1	12	-
	37-38	-	-	-	-	-	-	-	-	-	-	-
	39	-	-	-	-	-	-	-	H	1	11	-
		-	-	-	-	-	-	-	C	2	7	-
	40	-	-	-	-	-	-	-	-	-	-	-
	44-45	-	-	-	-	-	-	-	-	-	-	-
	46	-	-	-	-	-	-	-	H	1	-	-
	47	-	-	-	-	-	-	-	H	2	5.95	-
	48	-	-	-	-	-	-	-	H	1	-	-
	49	-	-	-	-	-	-	-	H	2	6.57	6.00-7.15
	50-55	-	-	-	-	-	-	-	-	-	-	-
	56	-	-	-	-	-	-	-	C	1	4.58	-
	57-66	-	-	-	-	-	-	-	-	-	-	-

Table 10.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 50, May 25 to June 3, 1953

Surface

Louding number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
1	3-4	-	-	-	-	-	-	-	-	-	-	-
	5	M	-	1	-	-	-	-	-	-	-	-
		CN	-	-	-	-	1	-	-	-	-	-
	6-7	-	-	-	-	-	-	-	-	-	-	-
	8	M	-	-	-	-	1	-	-	-	-	-
		CN	-	-	-	-	1	-	-	-	-	-
	9	WF	-	-	-	-	1	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	Y	1	7	-
	12-13	-	-	-	-	-	-	-	-	-	-	-
	14	M	-	1	-	-	-	-	-	-	-	-
	15-23	-	-	-	-	-	-	-	-	-	-	-
	25-45	-	-	-	-	-	-	-	-	-	-	-
	47	-	-	-	-	-	-	-	-	-	-	-
	48	-	-	-	-	-	-	-	Y	1	8	-
	49-64	-	-	-	-	-	-	-	-	-	-	-
	65	Y	-	-	-	-	1	-	-	-	-	-
	66-68	-	-	-	-	-	-	-	-	-	-	-
	69	Y	-	1	-	-	-	-	-	-	-	-
	70-75	-	-	-	-	-	-	-	-	-	-	-
	76-77	-	-	-	-	-	-	-	H	1	17	-
	78-89	-	-	-	-	-	-	-	-	-	-	-
	90	C-H	-	1	-	-	-	-	H	1	6.55	-
2	2-18	-	-	-	-	-	-	-	-	-	-	-
	19	-	-	-	-	-	-	-	HE	1	-	-
	20-23	-	-	-	-	-	-	-	-	-	-	-
	25-27	-	-	-	-	-	-	-	-	-	-	-
	28-29	RO	-	-	1	-	-	-	-	-	-	-
	30-31	M	-	1	-	-	-	-	-	-	-	-
	32-38	-	-	-	-	-	-	-	-	-	-	-
	39-40	M	-	1	-	-	-	-	-	-	-	-
		WF	-	-	-	-	1	-	-	-	-	-
	41	M	-	1	-	-	-	-	-	-	-	-
	42	Y	-	-	-	-	1	-	-	-	-	-
	43	M	-	-	-	-	3	-	-	-	-	-
	44	M	-	1	-	-	-	-	-	-	-	-
	45	M	-	2	-	-	-	-	-	-	-	-
	46	M	-	4	-	-	-	-	-	-	-	-

Table 10.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 50, May 25 to June 3, 1953--Continued

Surface--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	mm.
2--Cont.	47	RO	-	1	-	-	1	-	-	-	-	-
	48-69	-	-	-	-	-	-	-	-	-	-	-
	70	RO	-	-	-	-	1	-	-	-	-	-
	72-90	-	-	-	-	-	-	-	-	-	-	-
	91-92	CU	-	1	-	-	-	-	-	-	-	-
		Y	-	1	-	-	-	-	-	-	-	-
3	1-6	-	-	-	-	-	-	-	-	-	-	-
	7	RO	-	-	1	-	-	-	-	-	-	-
	8-21	-	-	-	-	-	-	-	-	-	-	-
	23-24	-	-	-	-	-	-	-	-	-	-	-
	25	-	-	-	-	-	-	-	C-H	2	-	-
	26-31	-	-	-	-	-	-	-	-	-	-	-
	32	-	-	-	-	-	-	-	C	1	-	-
	33-43	-	-	-	-	-	-	-	-	-	-	-
	45-71	-	-	-	-	-	-	-	-	-	-	-
	73-77	-	-	-	-	-	-	-	-	-	-	-
	78	-	-	-	-	-	-	-	C-H	1	-	-
	79-96	-	-	-	-	-	-	-	-	-	-	-
4	3	SH	-	-	-	1	2	-	-	-	-	-
	4	SH	-	-	-	-	1	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-	-	-
	6	SH	-	-	-	-	1	-	-	-	-	-
	7	SH	-	-	1	-	-	-	-	-	-	-
	8-16	-	-	-	-	-	-	-	-	-	-	-
	17	-	-	-	-	-	-	-	Y	1	9	-
	18-23	-	-	-	-	-	-	-	-	-	-	-
	27	-	-	-	-	-	-	-	Y	1	10	-
		-	-	-	-	-	-	-	H	1	35	-
	28-30	-	-	-	-	-	-	-	-	-	-	-
	31	-	-	-	-	-	-	-	Y	1	11	-
	32-35	-	-	-	-	-	-	-	-	-	-	-
	36	-	-	-	-	-	-	-	Y	2	7	6-9
	37-42	-	-	-	-	-	-	-	-	-	-	-
	43	G	-	-	-	-	1	-	-	-	-	-
	44	G	-	-	-	-	125	-	-	-	-	-
	45	G	-	-	-	14	-	-	-	-	-	-

Table 10.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 50, May 25 to June 3, 1953--Continued

Surface--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
4--	46	-	-	-	-	-	-	-	-	-	-	-
Cont.	50	SH	-	-	-	-	3	-	-	-	-	-
	51	M	-	-	1	-	1	-	-	-	-	-
		RH	-	-	-	1	1	-	-	-	-	-
		SH	-	-	-	-	1	-	-	-	-	-
		RO	-	1	-	-	-	-	-	-	-	-
		WI	-	-	-	1	-	-	-	-	-	-
	52	RH	-	-	2	-	-	-	-	-	-	-
		WI	-	-	-	-	2	-	-	-	-	-
		M	-	-	1	-	-	-	-	-	-	-
	53	RH	-	-	1	-	2	-	-	-	-	-
		M	-	-	-	1	1	-	-	-	-	-
		CN	-	-	-	-	1	-	-	-	-	-
		WI	-	-	-	1	-	-	-	-	-	-
	54	WI	-	-	1	1	2	-	-	-	-	-
		M	-	1	-	-	2	-	-	-	-	-
		SH	-	-	2	-	-	-	-	-	-	-
		RH	-	1	-	-	-	-	-	-	-	-
		CN	-	1	-	-	-	-	-	-	-	-
	55	RO	-	-	-	1	1	-	-	-	-	-
		M	-	-	3	-	2	-	-	-	-	-
		RH	-	-	5	-	1	-	-	-	-	-
		SH	-	1	2	-	-	-	-	-	-	-
	56	WI	-	-	-	1	1	-	Y	1	6.51	-
		M	-	-	1	-	1	-	-	-	-	-
		CN	-	-	-	-	1	-	-	-	-	-
		RH	-	2	1	-	-	-	-	-	-	-
		RO	-	1	-	-	-	-	-	-	-	-
		SH	-	-	1	-	1	-	-	-	-	-
		WE	-	-	-	1	-	-	-	-	-	-
	57	M	-	-	3	-	1	-	SH	1	5.44	-
		RH	-	1	-	-	1	-	-	-	-	-
		CN	-	2	-	-	-	-	-	-	-	-
	58	WI	-	1	-	1	-	-	Y	1	-	-
		M	-	1	-	2	1	-	SH	1	3.58	-
		CN	-	-	-	-	1	-	-	-	-	-
		RH	-	1	-	-	-	-	-	-	-	-
	59	WI	-	-	2	-	1	-	RO	1	3.41	-
		RH	-	-	1	-	-	-	-	-	-	-

Table 10.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 50, May 25 to June 3, 1953--Continued

Surface--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
4-- Cont.	59	M	-	-	3	-	-	-	-	-	-	-
		SH	-	1	-	1	-	-	-	-	-	-
	60	RH	-	3	1	-	-	-	SH	1	3.41	-
		SH	-	1	1	-	-	-	-	-	-	-
		M	-	-	2	1	1	-	-	-	-	-
		CN	-	-	-	-	1	-	-	-	-	-
		WI	-	-	1	-	-	-	-	-	-	-
	61	WI	-	1	-	-	-	-	-	-	-	-
		RH	-	-	2	1	-	-	-	-	-	-
		M	-	-	-	1	-	-	-	-	-	-
		CN	-	-	1	1	1	-	-	-	-	-
		WE	-	-	1	-	-	-	-	-	-	-
		SH	-	-	-	-	1	-	-	-	-	-
	62	M	-	3	1	1	1	-	-	-	-	-
		CN	-	1	1	2	3	-	-	-	-	-
		WE	-	1	-	-	-	-	-	-	-	-
		WI	-	3	1	-	-	-	-	-	-	-
	63	M	-	2	5	2	-	-	-	-	-	-
		CN	-	-	-	-	3	-	-	-	-	-
		WE	-	-	3	1	1	-	-	-	-	-
		WI	-	1	1	-	-	-	-	-	-	-
	64	M	-	-	3	-	-	-	-	-	-	-
		CN	-	-	1	1	-	-	-	-	-	-
		WI	-	1	2	-	-	-	-	-	-	-
	65	-	-	-	-	-	-	-	-	-	-	-
	69	CN	-	-	-	1	2	-	-	-	-	-
		M	-	-	-	-	1	-	-	-	-	-
		WE	-	-	-	-	1	-	-	-	-	-
	70	CN	-	1	-	-	-	-	-	-	-	-
	71	WI	-	-	1	-	-	-	-	-	-	-
		M	-	-	1	-	1	-	-	-	-	-
		WE	-	-	1	-	-	-	-	-	-	-
		CN	-	-	2	1	-	-	-	-	-	-
	72	CN	-	-	2	3	-	-	-	-	-	-
	73	CN	-	1	2	-	-	-	-	-	-	-
		M	-	-	1	-	-	-	-	-	-	-
	74	M	-	-	-	-	1	-	-	-	-	-
		CN	-	-	6	-	-	-	-	-	-	-
		WI	-	-	1	-	-	-	-	-	-	-

Table 10.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 50, May 25 to June 3, 1953--Continued

Surface--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
4--	75	CN	-	-	1	-	-	-	-	-	-	-
Cont.	76	M	-	1	-	-	-	-	-	-	-	-
		CN	-	2	-	-	-	-	-	-	-	-
		WI	-	2	1	-	-	-	-	-	-	-
	77	M	-	1	-	-	-	-	-	-	-	-
		CN	-	1	-	-	1	-	-	-	-	-
		WI	-	2	-	-	-	-	-	-	-	-
	78	CN	-	-	2	-	1	-	-	-	-	-
		M	-	-	1	-	-	-	-	-	-	-
		WE	-	-	1	-	-	-	-	-	-	-
	79	M	-	1	-	-	-	-	-	-	-	-
	80	CN	-	1	-	-	-	-	-	-	-	-
	81	M	-	-	-	1	-	-	-	-	-	-
	82	M	-	-	2	-	1	-	-	-	-	-
		WE	-	-	-	-	1	-	-	-	-	-
	83	CN	-	2	4	-	-	-	-	-	-	-
		M	-	-	2	-	-	-	-	-	-	-
		BL	-	-	1	-	-	-	-	-	-	-
	84	CN	-	-	4	-	-	-	-	-	-	-
		M	-	-	2	-	-	-	-	-	-	-
		BL	-	-	3	-	-	-	-	-	-	-
	85	CN	-	-	3	4	-	-	-	-	-	-
		M	-	1	-	2	1	-	-	-	-	-
	86	CN	-	2	2	2	8	-	-	-	-	-
		M	-	2	3	-	1	-	-	-	-	-
		BL	-	-	1	-	-	-	-	-	-	-
		S	-	2	-	-	-	-	-	-	-	-
									10 Meters			
1	1-19	-	-	-	-	-	-	-	-	-	-	-
	24-29	-	-	-	-	-	-	-	-	-	-	-
	30	-	-	-	-	-	-	-	Y	1	6.10	-
		-	-	-	-	-	-	-	A	1	11	-
	31	-	-	-	-	-	-	-	-	-	-	-
	32	-	-	-	-	-	-	-	H	1	10	-
	33	-	-	-	-	-	-	-	H	1	8	-
	34	-	-	-	-	-	-	-	Y	2	8	-
	35	-	-	-	-	-	-	-	-	-	-	-

Table 10.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 50, May 25 to June 3, 1953--Continued

10 Meters--Continued

Loading number	Gauze section	Species	Number of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	mm.
1--Cont.	36	-	-	-	-	-	-	-	Y	1	8	-
	37	-	-	-	-	-	-	-	SH	1	3.75	-
	38-41	-	-	-	-	-	-	-	-	-	-	-
	45	-	-	-	-	-	-	-	SH	1	4.44	-
	46-52	-	-	-	-	-	-	-	-	-	-	-
	53	SH	-	-	1	-	-	-	-	-	-	-
	54-60	-	-	-	-	-	-	-	-	-	-	-
	61	-	-	-	-	-	-	-	SH	1	4.92	-
	62-64	-	-	-	-	-	-	-	-	-	-	-
	66-81	-	-	-	-	-	-	-	-	-	-	-
2												
	1-18	-	-	-	-	-	-	-	-	-	-	-
	21-23	-	-	-	-	-	-	-	-	-	-	-
	24	M	-	-	1	-	-	-	-	-	-	-
	25-35	-	-	-	-	-	-	-	-	-	-	-
	36	M	-	-	-	-	1	-	-	-	-	-
	37	-	-	-	-	-	-	-	-	-	-	-
	40-41	-	-	-	-	-	-	-	-	-	-	-
	42	M	-	-	-	-	1	-	-	-	-	-
	43-59	-	-	-	-	-	-	-	-	-	-	-
	62-78	-	-	-	-	-	-	-	-	-	-	-
3	1-17	-	-	-	-	-	-	-	-	-	-	-
	23-24	-	-	-	-	-	-	-	-	-	-	-
	25	-	-	-	-	-	-	-	C	1	30	-
	26-28	-	-	-	-	-	-	-	-	-	-	-
	29	-	-	-	-	-	-	-	SH	1	3.37	-
	30-39	-	-	-	-	-	-	-	-	-	-	-
	42	-	-	-	-	-	-	-	-	-	-	-
	43	-	-	-	-	-	-	-	R	2	6.04	-
	44-62	-	-	-	-	-	-	-	-	-	-	-
	65-83	-	-	-	-	-	-	-	-	-	-	-
	84	-	-	-	-	-	-	-	Y	1	10	-
4	1	SH	-	-	-	-	3	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-
	3	SH	-	1	-	-	1	-	-	-	-	-
	4-15	-	-	-	-	-	-	-	-	-	-	-

Table 10.--Stages and sizes of fish eggs and larvae taken with the Hardy Recorder on *Albatross III* cruise no. 50, May 25 to June 3, 1953--Continued

10 Meters--Continued

Loading number	Gauze section	Species	Numbers of eggs in indicated stage						Larvae			
			I	II	III	IV	V	VI	Species	Number	Length	Range
											mm.	*mm.*
4-- Cont.	16	-	-	-	-	-	-	-	H	1	15	-
	21	-	-	-	-	-	-	-	H	1	35	-
	22	-	-	-	-	-	-	-	-	-	-	-
	23	-	-	-	-	-	-	-	C-H	1	-	-
	24-37	-	-	-	-	-	-	-	-	-	-	-
	40-42	-	-	-	-	-	-	-	-	-	-	-
	43	M	-	-	-	1	-	-	-	-	-	-
	44	-	-	-	-	-	-	-	-	-	-	-
	45	M	-	-	1	-	-	-	-	-	-	-
	46-49	-	-	-	-	-	-	-	-	-	-	-
	50	M	-	-	2	1	1	-	-	-	-	-
		CN	-	-	-	-	1	-	-	-	-	-
	51	M	-	-	1	-	3	-	-	-	-	-
		WE	-	-	-	1	-	-	-	-	-	-
	55	-	-	-	-	-	-	-	-	-	-	-
	56	M	-	-	-	1	-	-	-	-	-	-
		WE	-	-	1	-	-	-	-	-	-	-
	57	WE	-	1	-	-	-	-	-	-	-	-
	58-61	-	-	-	-	-	-	-	-	-	-	-
	62	-	-	-	-	-	-	-	SH	1	3.25	-
	63-64	-	-	-	-	-	-	-	-	-	-	-
	65	WI	-	-	-	-	1	-	-	-	-	-
	66	-	-	-	-	-	-	-	-	-	-	-
	67	BL	-	-	3	-	-	-	-	-	-	-
		M	-	-	-	-	2	-	-	-	-	-
	68	M	-	1	3	-	1	-	-	-	-	-
		BL	-	1	1	-	-	-	-	-	-	-
		S	-	1	-	-	-	-	-	-	-	-

Table 11.--Gauze section data on Hardy Plankton Recorders towed at surface and 10 meters, *Albatross III* cruise no. 46, March 19 to April 2, 1953

Loading number	Gauze section		Number of sections exposed	Distance travelled	Section equivalent	Conversion factor No. /5 mi.
	Start	Finish				
Surface						
				Miles		
1	1	21	21	114.1	5.43	0.92
	23	43	21	107.1	5.10	0.98
	46	64	19	100.7	5.30	0.94
	66	87	22	112.4	5.11	0.98
2	1	20	20	116.1	5.81	0.86
	22	42	21	113.2	5.39	0.93
	44	64	21	122.1	5.81	0.86
	66	85	20	121.3	6.07	0.82
	85	100	16	84.4	5.28	0.95
3	1	20	20	103.1	5.16	0.97
	22	41	20	120.2	6.01	0.83
	47	58	12	55.0	4.58	1.09
	60	85	26	141.9	5.46	0.92
4	1	5	5	22.8	4.56	1.10
	11	38	28	120.2	4.29	1.17
	40	64	25	114.6	4.58	1.09
	66	93	28	119.6	4.27	1.17
5	2	29	28	124.2	4.44	1.13
	29	53	25	111.3	4.45	1.12
	56	80	25	121.5	4.86	1.03
	80	99	20	93.4	4.67	1.07
6*	57	76	20	115.0	5.75	0.87
10 Meters						
1	1	16	16	114.1	7.13	0.70
	22	38	17	107.1	6.30	0.79
	43	56	14	100.7	7.19	0.70
	59	74	16	112.4	7.03	0.67
2	1	16	16	116.1	7.26	0.69
	21	36	16	113.2	7.08	0.71
	38	53	16	122.1	7.63	0.67
	58	74	17	121.3	7.14	0.70
	75	86	12	84.4	7.03	0.71

See footnote at end of table.

Table 11.--Gauze section data on Hardy Plankton Recorders towed at surface and 10 meters, *Albatross III* cruise no. 46, March 19 to April 2, 1953--Continued

Loading number	Gauze section		Number of sections exposed	Distance travelled	Section equivalent	Conversion factor No. /5 mi.
	Start	Finish				
10 Meters--Continued						
				Miles		
3	1	16	16	103.1	6.44	0.78
	18	34	17	120.2	7.07	0.71
	40	47	8	55.0	6.88	0.73
	49	69	21	141.9	6.76	0.74
4	1	4	4	22.8	5.70	0.88
	10	27	18	120.2	6.68	0.75
	32	49	18	114.6	6.37	0.79
	51	70	20	119.6	5.98	0.84
	72	90	19	124.2	6.54	0.77
5	1	18	18	111.3	6.18	0.81
	20	38	19	121.5	6.39	0.78
	40	53	14	93.4	6.67	0.75

*10-meter Recorder brought to surface.

Table 12.--Gauze section data on Hardy Plankton Recorders towed at surface and 10 meters, *Albatross III* cruise no. 48, April 24 to May 8, 1953

Loading number	Gauze section		Number of sections exposed	Distance travelled	Section equivalent	Conversion factor No. /5 mi.
	Start	Finish				
Surface						
				Miles		
1	1	28	28	152.0	5.43	0.92
	30	50	21	121.9	5.78	0.87
	53	73	21	112.7	5.37	0.93
	75	97	23	140.1	6.09	0.82
2	1	21	21	118.4	5.64	0.89
	23	55	33	185.7	5.63	0.89
	56	72	17	107.6	6.33	0.79
	74	93	20	111.5	5.58	0.90
3	1	15	15	84.4	5.63	0.89
	17	37	21	118.5	5.64	0.89
	39	59	21	117.3	5.59	0.90
	62	94	33	181.8	5.51	0.91
4	1	18	18	104.6	5.81	0.86
	20	40	21	124.5	5.93	0.84
	42	61	20	123.5	6.18	0.81
	63	95	33	188.8	5.72	0.87
5	1	36	36	203.6	5.66	0.88
	38	59	22	118.1	5.37	0.93
	61	81	21	130.1	6.20	0.81
	83	99	17	89.3	5.25	0.95
6	1	23	23	130.2	5.62	0.88
	25	45	21	116.8	5.56	0.90
	47	71	25	145.3	5.80	0.96
10 Meters						
1	1	24	24	152.0	6.33	0.79
	26	44	19	121.9	6.42	0.78
	47	64	18	112.7	6.26	0.80
	67	87	21	140.1	6.67	0.75
2	1	18	18	118.4	6.58	0.76
	24	51	28	185.7	6.63	0.75
	55	68	14	107.6	7.69	0.65
	70	85	16	115.5	6.97	0.72

Table 12.--Gauze section data on Hardy Plankton Recorders towed at surface and 10 meters, *Albatross III* cruise no. 48, April 24 to May 8, 1953--Continued

Loading number	Gauze section		Number of sections exposed	Distance travelled	Section equivalent	Conversion factor No. /5 mi.
	Start	Finish				
10-Meters--Continued						
				Miles		
3	1	14	14	84.4	6.03	0.83
	17	35	19	118.5	6.24	0.80
	38	56	19	117.3	6.17	0.81
	59	86	28	181.8	6.49	0.77
4	1	17	17	104.6	6.15	0.81
	20	37	18	124.5	6.92	0.72
	40	58	19	123.5	6.50	0.77
	60	87	28	188.8	6.74	0.74
5	1	31	31	203.6	6.57	0.76
	35	52	18	118.1	6.56	0.76
	55	73	19	130.1	6.85	0.73
	76	89	14	89.3	6.38	0.78
6	1	20	20	130.2	6.51	0.77
	24	40	17	116.8	6.87	0.73
	44	66	23	145.3	6.32	0.79

Table 13.--Gauze section data on Hardy Plankton Recorders towed at surface and 10 meters, *Albatross III* cruise no. 50, May 25 to June 3, 1953

Loading number	Gauze section		Number of sections exposed	Distance travelled	Section equivalent	Conversion factor No. /5 mi.
	Start	Finish				
Surface						
				Miles		
1	3	23	21	117.1	5.58	0.90
	25	45	21	112.4	5.35	0.93
	47	71	25	133.7	5.35	0.93
	72	90	19	112.9	5.94	0.84
2	2	23	22	118.8	5.40	0.93
	25	45	21	113.0	5.38	0.93
	46	70	25	130.7	5.23	0.96
	72	92	21	113.4	5.40	0.93
3	1	21	21	116.9	5.56	0.90
	23	43	21	120.4	5.73	0.87
	45	71	27	143.2	5.30	0.94
	73	96	24	127.2	5.30	0.94
4	3	23	21	109.9	5.23	0.96
	27	46	20	115.6	5.78	0.87
	50	65	16	82.0	5.13	0.98
	69	86	18	88.9	4.94	1.01
10 Meters						
1	1	19	19	117.1	6.16	0.81
	24	41	18	112.4	6.24	0.80
	45	64	20	133.7	6.69	0.75
	66	81	16	112.9	7.06	0.71
2	1	18	18	118.8	6.60	0.76
	21	37	17	113.0	6.65	0.75
	40	59	20	130.7	6.54	0.77
	62	78	17	113.4	6.67	0.75
3	1	17	17	116.9	6.88	0.73
	23	39	17	120.4	7.08	0.71
	42	62	21	143.2	6.82	0.73
	65	84	20	127.2	6.36	0.79
4	1	16	16	109.9	6.87	0.73
	21	37	17	115.6	6.80	0.74
	40	51	12	82.0	6.83	0.73
	55	68	14	88.9	6.35	0.79

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